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APRIL 1982

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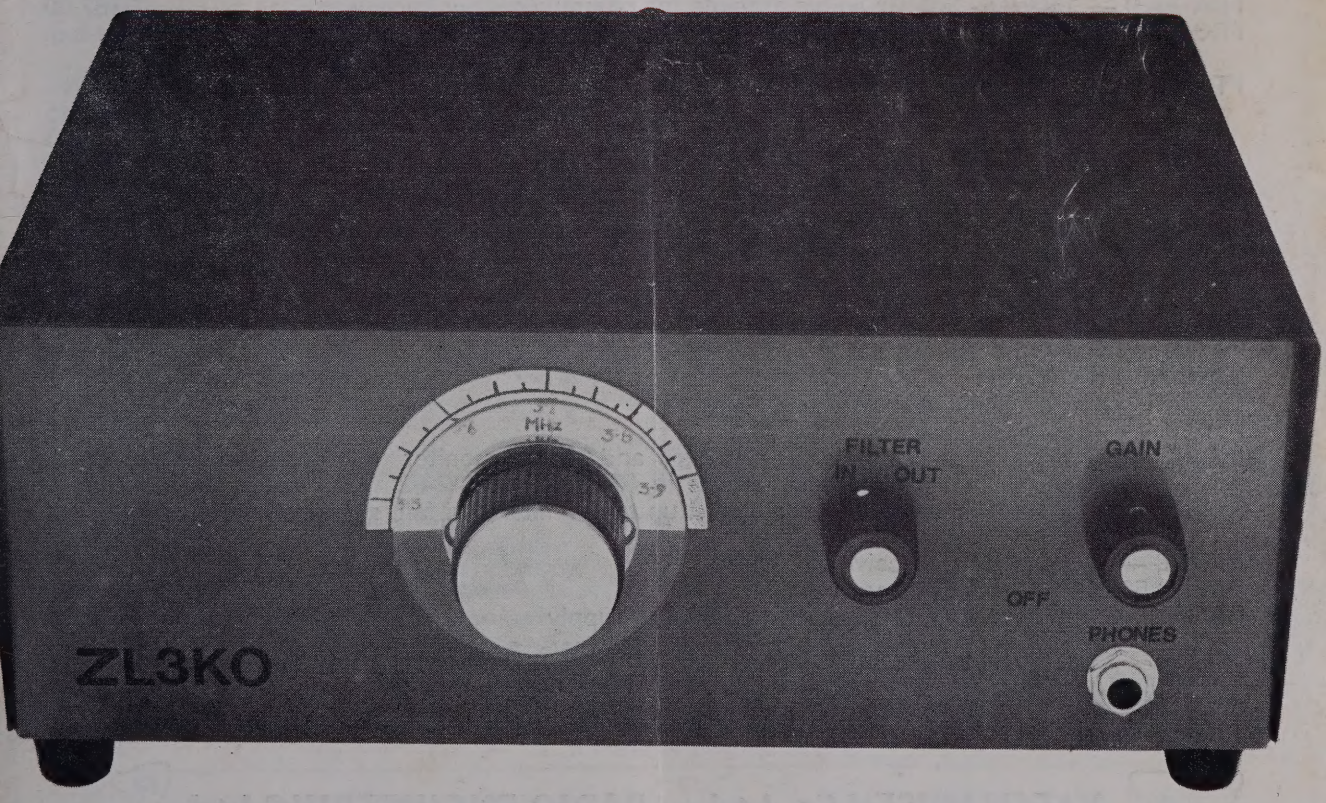

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GENERAL

VHF from the Top 9
Christchurch Branch Club Rooms 14
NAREC Information 24
Annual Reports and Remits 27

TECHNICAL

Direct Conversion Receiver for 80 Metres 4
40 Metre Mobile Antenna 12
Kenwood R600 Review 18
Sangster Special 19
Using the 18AVT/WB Trap on 10.1MHz 21

REGULAR FEATURES

AREC 52
Beacon Report 57
Call Sign Amendments 63
Contests and Awards 56
Dialog 22
Dxing 53
Hamads 65
IARU 51
Ionospheric Predictions 62
The Mailman Cometh 43
Orbital Predictions 49
OTC 60
POHQ 2
Silent Keys 59
VHF Scene 46
WARO 61

OUR COVER

A Direct Conversion Receiver for 80 Metres. See page 4.

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POST OFFICE HEADQUARTERS

[redacted] WELLINGTON

Mr A. G. Godfrey,
President,
New Zealand Association of
Radio Transmitters (Inc.),

Dear Mr Godfrey,

Thank you very much indeed for your kind letter conveying the congratulations of your Association on my appointment as Director-General.

I know that a very special relationship has been built-up between the Post Office and the Association and I know, too, that it is an extremely rewarding one. You may be sure that I will be concerned to do all I can to continue and foster this relationship and I look forward to my contacts with you and your colleagues.

With kind regards and thanks again for your thoughtfulness in writing. — F. K. McInerney.

MORSE PRACTICE

Mr J. F. C. Johnson,
Liaison Officer,
New Zealand Association
of Radio Transmitters,
15 Field Street,
Upper Hutt.

Dear Mr Johnson,

I refer to our recent discussion about the remit passed at the 1978 Annual Conference of your Association requesting permission to transmit five unit code groups during slow speed morse practice sessions. This request was declined on the grounds that such transmissions were contrary to the provisions of the Radio Regulations, which state that all transmissions in the amateur service shall be in plain language.

Recognising that significant progress has been made in the field of micro-processors, in particular speech synthesis techniques applied to devices that are designed to produce random morse generation for code practice purposes, the earlier decision has been reviewed.

Clearly, a distinction must be drawn between the use of encoded messages to achieve secrecy and the use of randomly used letters and figures that are transmitted only to improve the ability of the listener to copy morse code. In respect of the first point, the Post Office must continue to require all morse code messages and remarks transmitted within the amateur service continue to be in plain language. To insist that morse code practice conform to this ruling does seem to be, however, too literal a translation of the requirement.

Accordingly, transmissions from the three stations presently authorised to conduct morse code practice sessions under the aegis of the Manukau, Kapiti and Napier branches may now include randomly generated code. An announcement must be made at both the commencement and the end of the practice transmissions to the effect that the broadcast is from an authorised station using randomly generated material for morse practice sessions. In addition, such transmissions must be confined to appropriate frequencies in the 80 metre amateur band. — R. C. Williams, for Director of Telecommunication Operations.

☆ ☆ ☆

Morse practice can be provided on-air in two ways:

1. "OVERS". An operator who has shown competency in morse code (i.e. Grade I, Grade II or Novice) can provide practice morse by working another station on CW. This is a normal QSO and does not need NZPO approval. It is sometimes known as the "over" system. The text must be in plain language and it may be read-out in speech to assist the other station. Any number of listeners can benefit from this form of morse practice. It can be carried out on any suitable amateur frequency, HF or VHF, including repeaters, and can be publicised via branch newsletters.

2. "BROADCASTS". Broadcasts by amateur stations are not usually permitted but on behalf of NZART certain branches have NZPO approval to broadcast morse practice sessions on the 80 metre band from their Club stations. Until now, such broadcasts have had to be in plain language. The NZPO letter of 17 November 1981 which precedes this note, gives approval for 5-letter groups to be broadcast for morse practice provided announcements are made to the effect that randomly-generated material is being sent for morse practice purposes.

It is important to appreciate the two distinct systems. The "broadcast" version requires approval and is confined to the 80 metre band. The "over" system is a normal QSO and involves two or more stations in contact. The "over" system must continue to use plain language text.

Branches with approval to make morse practice broadcasts have been advised of this approval for 5-letter groups. Tapes of 5-letter morse groups with following synthesised-speech read-out have been prepared. Upper Hutt Branch 63 has a "Morsetalker MMS-1" to prepare such tapes.

Dates, times, and frequencies of morse broadcasts will be advised in "Break-in".

The Kapiti Branch has advised that ZL2KB will transmit each weekday from 1845 to 1930 local time on 3.55MHz LSB. Programme content to be a mix of 5 letter groups and plain language with read-out. Speed will be increased in weekly steps, between the first Wednesdays in each month, dropping back to 6 wpm on the evening of the monthly morse examination. The facility will be closed down from Christmas to mid-January. You could prepare your own tapes from these broadcasts for personal morse reception practice at other times.

Morse tapes continue to be available from the NZART Radio Training Scheme (see page 70 of NZART Callbook). — ZL2AMJ, NZART P.O. Liaison Officer.

NZART POLICY CITIZEN BAND

NZART policy on CB was published in July 1978 "Break-in" on page 222. WARC '79 has come and gone and only small changes are necessary. Council has approved this new edition for publication.

NZART Policy: Citizens Band Radio (CB)

The policy of the New Zealand Association of Radio Transmitters Incorporated towards Citizens Band Radio is:

1. There is a need for short-range personal radio communications in the community.
2. Citizens Band Radio should be allocated UHF frequencies to ensure short-range high-reliability working. The Australian choice of 476 MHz is excellent.
3. CB operators who wish to extend their interests should be encouraged to become radio amateurs.
4. CB operators are welcome as members of the Association but must accept that the Association remains firmly committed to the benefit of the Amateur Service in accordance with its constitution. Branches too must ensure that control through their constitution rests firmly in the hands of licensed amateurs and members of the Association.

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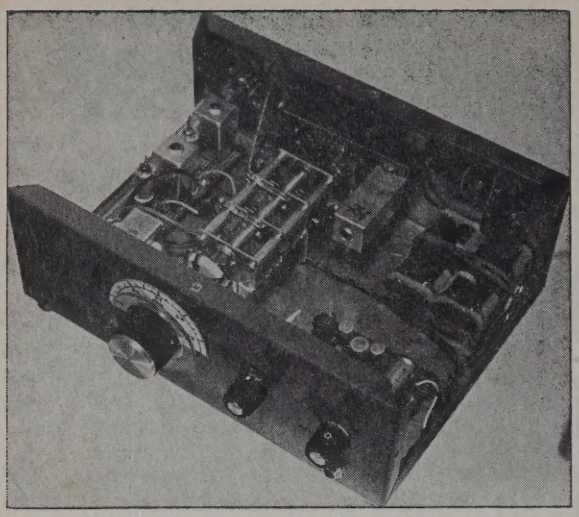


A DIRECT CONVERSION RECEIVER FOR 80 METRE CW AND SSB

by TONY STROOBANT ZL3KO

A relatively economical, easy to build receiver with excellent sensitivity and stability requiring only another receiver for alignment.

About a year ago I announced to all and sundry that "Ham radio isn't really Ham radio unless you've built it yourself" — and rather rashly sold my "appliance" (Kenwood) in order to go "home-brew". The transmitter seemed as if it would be the hardest part to build and get going so I started a Tucker Tin first. It was a lot of work but it more or less went together, lined up and checked out according to the book. Actually, the hardest thing about the Tucker Tin was getting hold of the most ordinary bits and pieces; a close second was the agony of paying for them at today's prices! Anyhow, the day eventually came when I found myself with an operational transmitter but no "ears" to receive with so I cast around for a cheap, quick to build but effective receiver.

I claim no originality whatsoever for the following design; you will see that I have lifted different parts of the circuit from various well-known publications (see bibliography). However the final product is the result of many hours wading through different designs and trying many of them out so although this breaks no new ground perhaps it will save some people a lot of time. All the components in this final version are very ordinary which means they are cheap (relatively!), available "off the shelf" (at the time of building) or that substitutes can be easily found. But most importantly this particular design **does work** — and work well! A measured sensitivity of around 0.5μV for a 3dB S+N/N ratio confirmed my impression gained from simply listening to the unit that it was every bit as lively as the receiver in the Kenwood I had sold.

Are there disadvantages with direct-conversion receivers? Well, I had few of the problems that the prophets of doom warn you about when building this type of receiver (microphonics, instability, etc.)—but perhaps I simply learned from their experience! The one disadvantage which is inherent in simple direct conversion receiver design is that the product detector, as well as passing through the **wanted** signal in the channel on the **lower** side of centre frequency (LSB is used on 80m) also "sees" anything in the channel immediately above centre frequency. If the reason for this is not clear read ahead to "Principles of Operation". In theory this makes the receiver bandwidth twice the ideal but in practice, with a reasonably good filter following the product detector, there is seldom any problem with adjacent channel interference. It is certainly a small price to pay when the receiver otherwise gives top performance at a fraction of the cost and complexity of a commercial unit.

Principles of Operation

As the title "direct conversion" implies, the incoming signal is mixed with a local oscillator and converted direct to audio frequencies. This is in contrast with an ordinary superhet where the incoming signal is mixed with a local oscillator offset in frequency to produce some intermediate frequency (IF). To illustrate the operation of a direct conversion receiver consider that we wish to receive a CW signal. The input tuned circuits will be tuned to the incoming

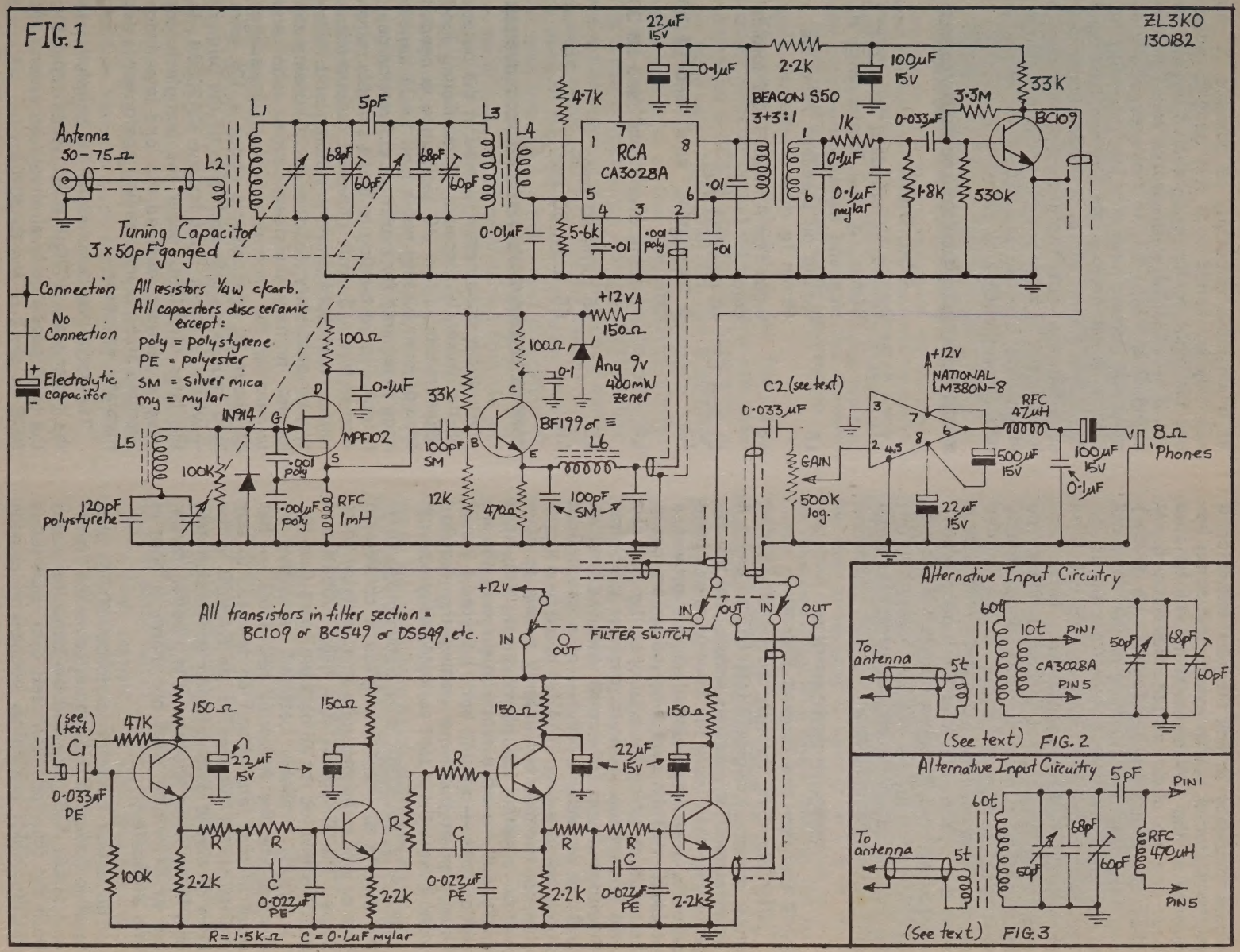


FIG.1
ZL3KO
130182
Antenna
50-75Ω
L1
L2
L3
L4
L5
L6
5pF
68pF
60pF
Tuning Capacitor
3x50pF ganged
RCA
CA3028A
4·7k
22µF
15V
0·1µF
2·2k
100µF
15V
BEACON S50
3+3:1
1k
0·1µF
0·1µF mylar
0·033µF
3·3M
33k
BC109
1·8k
330k
0·01µF
5·6k
·01
·001 poly
Connection
No Connection
Electrolytic capacitor
All resistors ¼w c/carb.
All capacitors disc ceramic except:
poly = polystyrene
PE = polyester
SM = silver mica
my = mylar
+12V
150Ω
100Ω
Any 9v 400mW zener
IN914
MPF102
BF199 or ≡
33k
100pF SM
12k
470Ω
100K
120pF polystyrene
·001µF poly
RFC 1mH
C2 (see text)
NATIONAL LM380N-8
GAIN
500K log.
RFC 47µH
500µF 15V
100µF 15V
8Ω 'Phones
All transistors in filter section = BC109 or BC549 or DS549, etc.
FILTER SWITCH
IN
OUT
(see text) C1
47K
0·033µF PE
100k
2·2k
C
0·022µF PE
R
R=1·5kΩ C=0·1µF mylar
Alternative Input Circuitry
To antenna
60t
10t
5t
PIN1
PIN5
CA3028A
50pF
68pF
60pF
(See text) FIG.2
Alternative Input Circuitry
5pF
RFC 470µH
(See text) FIG.3

signal frequency as will the local oscillator. If the oscillator is set to **exactly** the same frequency as the CW signal there will be zero beat and no audio output. However, if we offset the local oscillator (either high or low) say 1kHz from the incoming carrier there will be a 1kHz beat note output from the mixer. This will be at very low level and will need considerable audio amplification. Now consider the reception of a sideband signal. The local oscillator must be positioned exactly where the suppressed carrier of the wanted signal would be. The LSB signal will now beat with the local oscillator in the product detector (mixer) and the mixer output will produce the wanted signal in the audio spectrum — but, as explained before, at very low levels and requiring amplification.

CIRCUIT DESCRIPTION

Input Circuitry and Product Detector

After thumbing through dozens of different mixer designs I originally intended to use a 4 diode mixer. They looked simple and the experts said they were the lowest noise option around. However, suitable diodes proved a problem: 1N914A switching diodes are cheap but need matching for best operation and can give horrendous spurious response problems; Schottky diodes overcome these difficulties and are available locally — at a price! Gold bonded diodes (e.g. OA47's) could be a workable compromise but nobody seems to have written anything up about them. But what finally put me off a diode mixer was the insertion loss — around 6dB. I figured I would have enough problems getting the required audio gain without that sort of liability as well!

The RCA CA3028A is an active mixer costing around $2 retail and gives a conversion **gain** as well as having quite an acceptable noise figure. The CA3028A has been around and used for this job for at least ten years (see ref. 1) and is probably bettered nowadays by devices like the Motorola MC1496G — but more of that later. Don't be tempted to buy the dearer "B" version of the CA3028 in the hope of maybe getting higher conversion gain or a lower noise figure — it **is** a better device, but at DC which does not matter a hoot in this application.

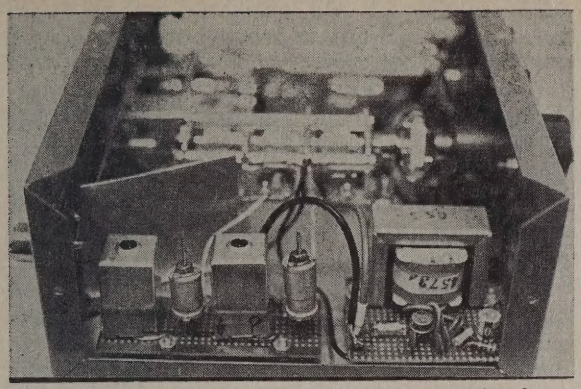
The input circuitry matches 50-75 ohm feedline through link L2 wound over the "cold" end of L1. A 3 gang variable capacitor tunes both the local oscillator and two input tuned circuits which are lightly coupled to provide as much input selectivity as possible. If you can only lay hands on a two gang capacitor use the input configuration shown in Fig 2 or Fig. 3 — either of which works well. The coil in Fig. 2 is a bit fiddly to make, especially as most coil formers have only four lead-out pins. Drill a small hole in the former base and Araldite in a short length of tinned-copper wire as a fifth lead-out. The arrangement in Fig. 3 looks easier to make but it is still rather clumsy in practice because the 470μH RF choke is larger than the IC!

COIL DATA

L1, 2, 3, 4	wound on standard 7mm dia. x 34mm 1g. coil former with HF slug and shield can.
L5	wound on standard 7mm dia. x 48mm 1g. ditto
L6	wound on Amidon T50-2 toroidal core
L1 and L3	60 turns 30 swg
L2	5 turns over "cold" end L1 30 swg
L4	10 turns over "cold" end L3 30 swg
L5	85 turns 30 swg
L6	65 turns 30 swg

An audio transformer is used at the output of the mixer IC because of conflicting load requirements: a low DC resistance is needed for optimum biasing but a high (AC) impedance is required for maximum conversion gain. It took a lot of hunting to find a suitable transformer but a 3 watt universal output transformer with split primary winding and multi-tapped secondary did the job. Choosing the **lowest** primary/secondary turns ratio and terminating the secondary with an impedance of about 1k ohm reflects about a 10k ohm load impedance into each side of the primary —which is about right for the CA3028A. In the later MC1496G mixer the manufacturers have apparently resolved the load impedance dilemma and a clunky audio transformer is not normally necessary.

The local oscillator signal is coupled into the mixer via a 1000pF polystyrene capacitor; the local oscillator level should be around 1V RMS at pin 2 of the CA3028A.



From left to right in the foreground are the input tuned circuits: coils inside shield cans and associated "beehive" trimmers. The mixer is mounted on a separate piece of veroboard; the IC is in the foreground with its associated resistors and capacitors and the audio coupling transformer is behind. The oscillator shield plate is seen behind the RF input section.

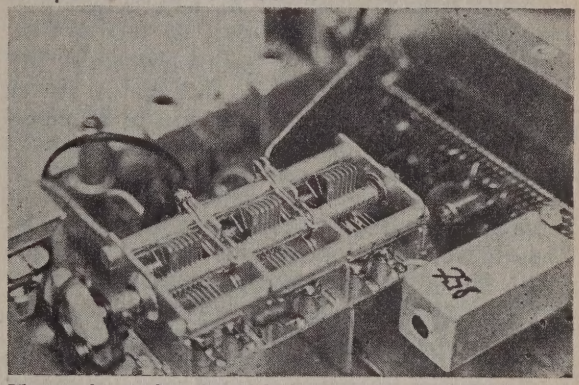
Audio Amplifier

The audio output signal is fed from the product detector output via a passive low pass network to a BC109 preamplifier biased for a low noise and high gain. **Do** use a genuine BC109 and not an "el-cheapo" equivalent; low noise is crucial at this stage because almost all the receiver gain is in the audio section. The audio output stage uses a LM380 which has a fixed gain of 50. Other breeds of output IC have more gain (e.g. the MC1306P) could be used at this point. However, more important than **total** gain is the proper **proportion** of gain before and after the filter and gain control — the BC109/LM380 combination does the job nicely. The 47μH RF choke and 0.1μF capacitor at the LM380 output are probably not strictly necessary but are included to supress RF oscillations that some of these devices are apparently prone to. The LM380 is rated at 2 watts output — plenty of steam to drive a small speaker, although I personally always prefer to use phones. Place the 500μF LM380 power supply bypass capacitor as close to the device pins as possible.

Local Oscillator

The series tuned Clapp circuit seems to be almost universal for high stability VFOs. **Do** shout yourself polystyrene capacitors for this part of the receiver; keep your silver micas for the front end and your ceramics for bypassing. I found this oscillator exceptionally stable — I seldom have to touch the tuning dial during the course of a half hour (or longer!) QSO.

The BF199 is an emitter follower used to isolate the mixer from the VFO. The pi filter on the buffer output is to ensure that a noise free local oscillator signal is fed to the mixer. It may not be strictly necessary but my impression is that the signal quality is cleaner and crisper with it included in.



The main tuning gang is mounted on 4 3/16" dia. bolts from the chassis floor and connected to the dial drive mechanism via a flexible coupling. The rear section of the tuning gang is used for the oscillator section. The oscillator board is mounted on the inside of the rear panel at right angles to all the other boards and major components. A metal shield plate separtes the oscillator from the RF input circuitry.

Bandpass Filter

In a direct conversion receiver the bandwidth is determined by the **audio** amplifier. This may seem a little unusual at first glance but it does mean that experimenting with different bandwidths is a lot cheaper and easier than in a conventional IF strip. The audio filter shown is lifted straight out of one of the handbooks (see Ref. 2) so there is not much extra that needs to be said about it. However, **do** use mylar and polyester capacitors down this strip; I eliminated a lot of "popcorn" noise by substituting these for the disc ceramics that I had originally installed. This circuit is a 3 pole active low pass filter which improves considerably upon the passive filtering at the BC109 input:

Upper Audio Frequency Response

	Filter OUT	Filter IN
— 3dB	3.0kHz	2.0kHz
— 6dB	4.2kHz	2.2kHz
—10dB	7.0kHz	2.4kHz

At a total parts cost of less than $5 it is well worth including — it dramatically reduces the "monkey-chatter" from adjacent channels and almost eliminates the mind shattering effects of static bursts. If you are going to use this receiver primarily for CW reception you can easily tailor the upper cutoff frequency to around 1kHz by increasing R to 3.3k ohms. The lower cutoff frequency in this receiver is determined by C1 and C2. With the 0.033μF values shown this is around 350Hz (3dB

down). All my reading suggests that there is no useful voice energy below this frequency (for **communications** purposes) but if you want a more conventional lower cutoff frequency increase both C1 and C2 to, say, 0.1μF.

Power Supply

The very first thing I discovered in all my experimenting was to keep AC mains as far away as possible from this type of receiver! Even routing the aerial through the transmit/receive relay of my transmitter introduced a little hum because of common grounding — though not enough to normally be noticeable. The quiescent current of this receiver is 45mA (with filter ON) so battery operation is thoroughly predictable. My receiver is still running happily on the original set of pencells that I installed although I still hope, one day, to find some sort of workable arrangement for mains operation.

Setting Up

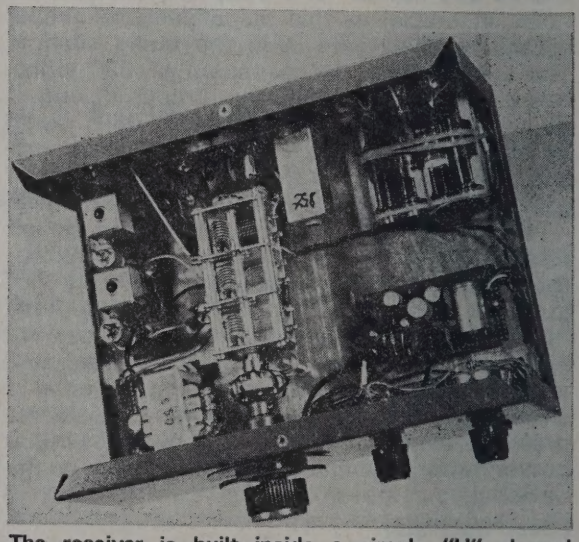
Check the local oscillator frequency range using a calibrated wavemeter or another receiver. Adjust the oscillator coil slug to set the lower band edge. You may need to change the value of the fixed capacitor that is in parallel with the tuning capacitor so that the whole 80 metre band is spread out nicely across the dial with the particular tuning gang you use. **Do** play around with **fixed polystyrene** capacitors at this point — **don't** be tempted to fit any sort of trimmer capacitors which might spoil the intrinsically good stability of this VFO.

At the input end you do not even need a signal generator for alignment because the local oscillator runs at a frequency very nearly equal to the incoming signal frequency. Leave the shield can off the oscillator coil initially and couple a little VFO energy out of it with a one or two turn link loosely coupled on the top of the coil former. Feed this signal to the input terminals of the receiver. Temporarily disconnect the mixer as the tuned circuit load and hook up a germanium diode (OA90 etc.) and a multimeter (on the low volts DC range) as a detector at the tuned circuit output. Adjust the slugs of the tuned circuits for maximum output at the low frequency end of the scale and the trimmers for the same at the top of the band. Alternate these adjustments so that the tuning of the input circuits track exactly with the oscillator and the output indication on the diode/multimeter detector is more or less constant right across the dial. By all means use a signal generator for final adjustments after everything is boxed up and finished but I found that, using as loose as possible coupling to the oscillator coil to avoid pulling, I could not improve upon the above method.

When you get to the debugging stage, remember — most of the receiver gain is at **audio** frequencies so the headphones may howl with the gain control near full up. I had no problem with audio instability with the gain control around the usual operating position.

Construction

I built the different sub-sections i.e. input tuned circuits, mixer, audio amplifier and local oscillator on separate pieces of Veroboard so that I could experiment with different devices and circuits. Layout does not seem to be critical nor does component selection but **do** use polystyrene capacitors in the critical RF positions and mylar, rather than ceramics, capacitors in the low-level audio positions. All the boards, the 8 cell battery pack and the three gang tuning capacitor complete with planetary drive fitted very comfortably into a 9" x 7½" x 3½" high enclosure to complement my Tucker Tin transmitter. Be sure to use screened cable for all the low-level audio runs and, generally speaking, earth the braid at **one end only.**



The receiver is built inside a simple "U" shaped chassis. Different circuit sections are built on pieces of veroboard which are mounted on standoffs from the chassis bottom. On the extreme left hand side the RF input coils and associated trimmer capacitors run from the antenna input socket at the rear towards the front panel. The mixer section and audio coupling transformer are mounted in front of the RF input board. The 3 gang tuning capacitor occupies the middle of the chassis; it is connected to a front panel mounted planetary drive via a flexible coupler. The audio amplifier board is mounted close to the gain control and output jack. A pair of 4 cell battery holders take up the remaining corner and are held in

place with a heavy rubber band! (for easy removal). The oscillator board is kept in a compartment of its own by the metal shield which runs on the left hand side of the tuning gang and by the metal shield can of the oscillator coil on the right hand side.

Future Developments

Direct conversion receivers work very comfortably on the 160, 80 and 40 metre bands. Although VFO stability is said to be acceptable on the 20 metre band I won't be pressing my luck and will be building a crystal controlled converter for 20 metres using this receiver as a "tunable IF".

As mentioned previously the Motorola MC1496G IC is a more modern type of mixer and happily accepts a resistive load at its output. I shall certainly be trying out this device — I'm determined to get rid of the audio transformer for aesthetic reasons, if nothing else! The MC1496G is run at a higher DC bias current which may make the receiver less susceptible to overloading by our local "Kilowatt Kid" who, from time to time, seems determined to set fire to my headphones with RF!

Otherwise the performance of this little receiver speaks for itself. It is hard to know where to begin to try to improve things, even if you wanted to!

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VHF FROM THE TOP

By RUSSELL SHACKLETON ZL1BQK

VK VHF opening 25 January:

I run an FDK Multi 750A feeding a 10 element yagi cut for 144MHz at a height of about 6m. I transmit under the next door neighbour's TV aerial but over the 11kV power lines on the other side of the road. There are similar power lines across the back of my section too. What's that about an ideal QTH?

From my location in Kaitaia, I can DX towards Australia but nowhere elsé on VHF. At approximately 8.50 pm I heard voices on 144.1 MHz SSB. After months of listening, I had got someone: VK2BA (David) operating from the Blue Mountains near Sydney.

So I alert Tony (ZL1BHX) and Brian (ZL1 BAY) just down the road and we are into it. Talk about bedlam, and excitement. I worked 7 VKs before finally stopping at 12.30 am.

Tony worked 17 VKs on 2 metres and 2 on 70 cm — his first "across-the-pond" on that band. Brian worked 2 VKs on simplex using 25 watts into a 6 element yagi.

After my first trans-Tasman opening it took me an hour to relax enough to get to sleep.

VHF Field Day 30-31 January:

After our first effort at VHF contesting in December last year we have built this 13 element yagi on an 8 metre boom, cut for 144MHz and rigged for portable operation.

The club's VHF "team" (myself, Carol 1HS, Mike 1TSH and Tony 1BHX) set off for Te Paki, 310 metres above sea level and south-east of Cape Reinga. We had gear for 6, 2 and 70cm. Tom ZL1THG and Don ZL1BJB ran the 1296 and the higher "gig-type" bands. And, the mosquitoes knew they were on to a good thing. Tourists!

We made a much better showing this time even though there weren't too many stations out. Tony's greatest thrill was working ZL2ARW at Mt Burnett near Nelson using 15 watts on 432.

VK VHF opening 8 February:

The band opened to Sydney and Newcastle at about 4.15 pm. It would stay open for about 45 minutes, fade out for an equal length of time and then away it would go again. This time most contacts were made on FM repeaters over the next 40 hours. The "equipment used" list in my log looks funny — skeleton slot, IC22S and even an IC2A. Carol and Tony did most of the work — 66 to Carol and 56 to Tony. I contended myself with 12.

Most of the VKs were amazed to work New Zealand on their local repeater and one thought we might be pirates! Two were worked mobile on the Sydney Harbour Bridge. The most interesting contact went like this: Geoff (VK2YUC) was going to catch the train to his saltmine and works Carol. When the band opened again, Carol heard Geoff and a mate talking on the repeater. The mate suggested Geoff had been on the meths if he thinks he has been working ZLs via the repeater. Carol put herself on frequency. Stunned silence, then "See. I told you so!"

The most interesting point is that Kaitaia seemed to be getting the best of the opening. We heard Ray (ZL2TAL) in New Plymouth working but he seemed to have a great deal of difficulty. We did not hear any other ZLs. It seems I have much to discover about VHF propagation.

Branch 78 VHF Field Day Team. Left to right, Mike ZL1TSH, Russell ZL1BQK, Carol ZL1HS, Tony ZL1BHX.

And the Future?

Our VHF "team" is interested in working DX on either 2 metres or 70cm. Tony is considering gearing up for 1296 also. During contests we usually use the NZART Branch 78 callsign of ZL1BG.

Equipment:

2 metres: 13 el; 16dB yagi on 144.2MHz SSB with linear power.

Furthest contact —

internal: Te Paki (8 km SE Cape Reinga) to Ohakune;

external: Kaitaia to Newcastle, Australia.

70cms: 27 el, 26dB loop quad with 15 watts. A linear is being obtained but we prefer to use QRP.

internal: Te Paki to Mt Burnett near Nelson.

external: Kaitaia to Newcastle, Australia.

For effective DX to the south, we have to operate a portable station and our equipment is designed with this in mind.

When you decide to work us, we can be contacted on the Branch 78 net on Sundays, 3.665 MHz at 8 pm, or write to the Secretary, P.O. Box 218, Kaitaia. In ideal conditions catch us on the 6900 repeater in Sydney.

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ZL1HV

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40 METRE MOBILE ANTENNA

by GRAHEME HUNT, ZL1ANH

The acquisition of a solid-state rig and the decision of NZART Conference Committee to hold a 40m Mobile Rally prompted the writer to build a suitable antenna.

Little information was available from any recognised texts although it was generally agreed that a quarter wave antenna would use approximately a half-wave of wire. A formula for helicals wound on fibreglass blanks was obtained on the air. However, something was lost in its reception because a 7 MHz antenna built using the magic formula resonated on the 2 MHz marine band and weighed 5kg!

The writer was faced with two possibilities; either to waterproof the family station wagon and add a propeller, or to alter the antenna to 7 MHz. After some indecision it was decided to alter the aerial.

The resultant antenna appears in Fig. 1. A fibreglass fishing rod blank 2.7 metres long and 30 mm at the base was used.

Construction

A method should first be worked out to mount the blank on the vehicle. This will vary with the make of car but should be sufficiently strong to stand the ravages of time and low bridges.

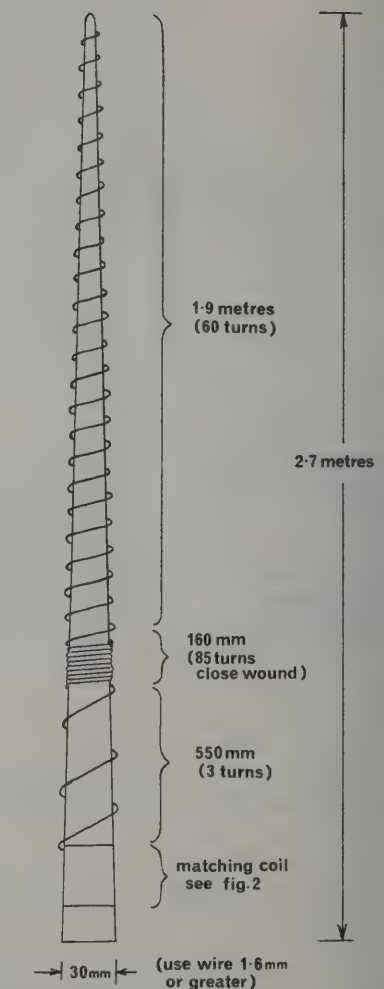
The helical can then be wound as in Fig. 1. Allow another 10% in the number of turns as these can then be removed until resonance is reached. Use varnished single conductor wire of 1.6 mm diameter or greater.

As subsequent matching to the transceiver will alter the resonant frequency at this stage, aim to resonate the antenna at 7020 kHz.

The two most common methods of finding the resonant frequency are the use of a grid dip oscillator or a receiver with general coverage. For the second method connect the receiver to the top of the matching coil and tune until the noise peaks. With this antenna a noise peak is quite pronounced and will enable one to tune the antenna to the 40 metre band. Once within band limits a measurement of SWR will indicate resonant frequency.

Matching (See Fig. 2)

The coil will assist to match impedance between antenna and rig. In some instances it is possible to couple directly to the antenna and omit the matching coil.



40m HELICAL WHIP FIG.1

If the SWR is high, build the matching coil as follows:

(a) Strip enough wire of varnish (about 1 metre).

(b) Wind as shown in Fig. 2.

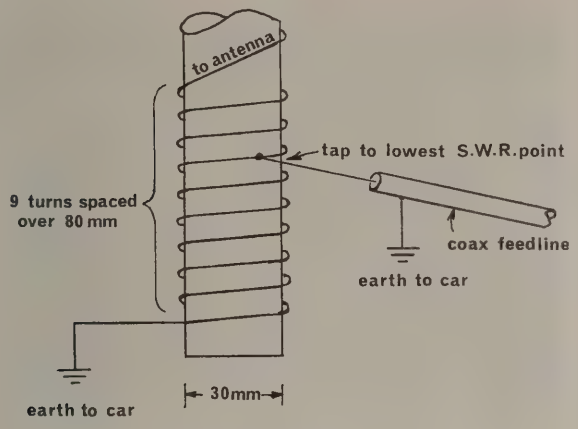


FIG.2 MATCHING COIL

(c) Connect the bottom of matching coil to earth.

(d) Connect the top to the antenna.

(e) Using a crocodile clip, move the coax. feedline from the rig up and down the coil until the SWR is lowest. (Indicated SWR can be as low as 1:1). Solder the coax to this point.

At this stage the antenna can be given its final tune to resonance using the lowest point of SWR as reference. As a personal choice 7110 kHz was used.

Several coats of marine polyurethane are then applied over the antenna, matching unit and the end of the coax. No appreciable change of frequency resulted from its application.

It would be possible to alter the resonant frequency of the antenna by mounting a short telescopic whip at the top but with the relatively broad band of acceptable SWR it was thought unnecessary.

On the Air Operation

The mobile signal with this antenna has been the subject of many favourable comments. Using 100w DC input, W, DK, and LU have answered by CQ calls. In the 1981 mobile rally, signals were consistently 2S-units stronger on the Auckland-Christchurch path than other competitors.

My solid state rig is able to operate on full output across 80 kHz (see Fig. 3).

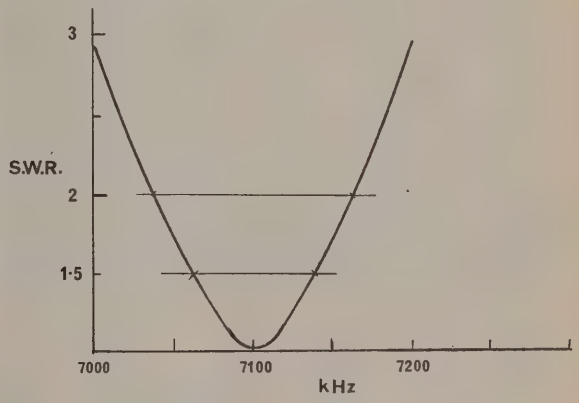


FIG.3 S.W.R.

The above indications are subjective of course, but in the absence of other information may assist you getting on 40 metres mobile.

Aknowledgement

I would like to thank Murray ZL1BHW for his assistance with the mechanical construction.

μPs in Cars

If the μP technocrats have their way it won't be long before you sit in your car and say "Home James" and it will take you there. Some ideas at a recent conference on automotive electronics were complete engine control, anti-skid braking, tyre pressure warning, wheel alignment monitoring, adjustment of mirrors and seats, built in diagnostic performance checks, reminders for oil changes and servicing, door and ignition locks, route indication, radar collision prevention, automatic headlight dipping and windscreen wiper operation, head-up displays of instruments. And it could all be voice synthesized to tell you as well as show you. Perish the thought.

ZL1HV

CHRISTCHURCH BRANCH N..A.Z.R.T NEW GALBRAITH CLUBROOMS

By REG BOTT ZL3RE & DON MacKAY ZL3RW

Saturday, December 12, 1981, will be remembered for a long time by many Christchurch amateur radio operators as the date when a dream came true.

First of all, let us review briefly the several venues of the Christchurch Branch over the last three decades.

1952 Meetings held at Hay's Tearooms, Gloucester Street.

1953 Canon Street Hall.

1956 H.M.N.Z.S. Pegasus, intermittently with the "Orange Hall", St. Asaph Street.

1962 Crippled Men's Association Rooms, Cashel Street.

In December 1962, at the Annual General Meeting, a member commented that our Club still had no secure "home" in spite of the years it had been together. He said that we should be working towards a Clubroom we could really call our own. Members present supported the proposal and this meeting was followed by a search around Christchurch for a suitable venue.

In February 1963 the Christchurch Branch moved into an old disused church schoolhouse in Galbraith Avenue, known locally as the St. Francis' school. This premises was in need of painting and maintenance, so over the next year or so members set to and spruced up the property.

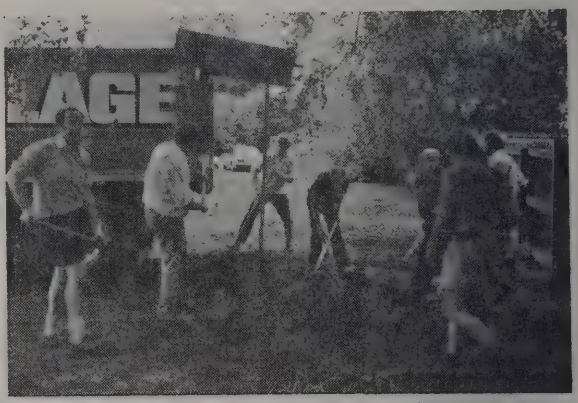
In 1968-1969, the property became available for purchase, so with accumulated funds, and the financial support of a large number of our members, we were able to make the Clubrooms almost freehold. It took only a further year or so, to call the property "OURS".

The raising of funds did not stop at that point. Many renovations were required including a kitchen and toilet block, and other improvements such as the redecorating of the interior followed during the following few years.

We must record here, the major contribution made by the Christchurch Branch Projects Group, whose success with "Galbraith" products has so much assisted the completion of our building programme.

Back in 1965, John Jaminet, WØFRD, a keen Club member who was attached to "Operation Deep Freeze", suggested the development of an

Demolition Day: The old clubrooms about to be reduced to a pile of timber.



A truck is scrounged and the spade-brigade attempts to fill it.

Standard lunch-break menu was fish and chips and orange juice.

The finished product, with the main entrance nearest camera.

Even the spacious new clubrooms can be filled during regular monthly meetings.

SWR meter as a Club project. It was a great success, and was the fore-runner of the wide range of equipment designed and produced by members of our Club and made available to our membership throughout the country.

Some years later the car park was sealed with bitumen and a small tower erected. Membership and attendances gradually rose until in 1980, in the old Clubroom, we often had the problem of "standing room only" on branch meeting nights.

By this time, the accumulated funds of Galbraith Projects, the Amateur Radio Emergency Corps Section, the Christchurch VHF Group, and the General Club funds, were such that a new Clubhouse became a distinct possibility. Building costs were escalating fast and it was generally felt that, if we did not take prompt action, they would become prohibitive and outstrip the resources of our members. However, early in 1980, a member moved from the floor that before redeveloping the existing site, we should look at alternatives, preferably closer to the centre of the city. Some months passed, and the cost factor, parking problems, rates etc., indicated clearly that only one option was open to us, to redevelop the Galbraith Avenue premises. This was passed, almost unanimously at a meeting in late 1980. Members were invited to present ideas to the branch committee, for the design of the building. Several months later the sketch plans were presented to the branch membership for consideration.

Early in 1981 tenders were called for the construction of the "New Galbraith Clubrooms". Four tenders were received, and the price of $37,000.00 was accepted. The demolition of the old Clubrooms took place in March 1981. The site was cleared in little more than a day, with members and neighbours making short work of the free firewood.

During the next few months, Branch meetings were held at various venues round the city. AREC met at the Civil Defence Headquarters, and the VHF Group had a feast of "visits". Our Radio Classes were transferred to the Shirley Boys' High School for the remainder of the year.

In conjunction with the builder, members did some small jobs around the site, but most of the work was left to the contractor. Painting, floor coverings and a lot of the finishing work was done by keen and enthusiastic members during the weekends and evenings.

The great moment arrived on Saturday December 12th at 3 p.m., when the Mayor of Christchurch, Mr H. G. Hay, officially opened the new Clubrooms. The Branch President Gareth Bradshaw ZL3VP and NZART President, Arthur Godfrey ZL1HV gave short speeches. Also present were NZART Councillors Marion Lester ZL1BKL, Gerry Kilpatrick ZL1BBS, Jim Meachen ZL2BHF, Terry Carroll ZL3QL and Neville Digby, ZL3OJ; the General Secretary NZART, George Blackwell ZL3NT, the Editor of "Break-in", Bruce Jensen ZL3ABJ, and representatives from Police, Civil Defence, Search and Rescue, Civil Aviation, and the Christchurch Municipal Electricity Department. A very enjoyable social evening followed.

Readers may ask, "Was it worth it?" You may judge for yourselves. Our Club is debt free; many members dug deeply into their pockets in 1981 to support the venture. Some who could not help financially provided goods or labour. It was a strain on some of us but we believe that the pleasure of enjoying our new Clubrooms, more than compensates for our efforts.

The new operating room with a RTTY demonstration in progress.

During this year, 1982, we all hope to spend some time playing at radio.

A brief resume of costs:

Contract Price with Builder	$37,000
Painting and Electrical	$ 4,000
Floor Coverings	$ 2,200
Donations from Members 1981/82	$ 5,000
Balance of Accumulated Funds, Interest, Projects, etc. The Total Investment is worth	$65,000

Our radio class enrolment was 49 as at 16-2-82, requiring two nights a week. There are three Club meetings a month and other activity nights. We have a shack to set up, a library to organise, and many other small tasks which will make our Clubrooms enjoyable to all members. Meetings are held on the first three Wednesdays of the month and we offer a warm welcome to visiting hams from other places.

In conclusion, to our Christchurch Club members, a hearty vote of thanks. The "New Galbraith Clubrooms" are the result of a fine combined effort by you all. It only remains for you to use and enjoy them.

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THE KENWOOD R600 RECEIVER

A REVIEW

By TREVOR KING ZL2AKW

In the 60's and 70's general coverage receivers were either horrendously expensive or seriously lacking in frequency stability; some were both.

The advent of the mass-produced phase-locked loop has largely solved the stability problem and the advent of the R600 Kenwood (as advertised in December 1981 "Break-in") has gone some way to bringing a general purpose receiver within the price range of an ordinary bloke.

The R600 provides a means of checking both out-of-band spurious transmissions or on-frequency quality. At a pinch it can be used for split frequency DX and, as the R600 includes the broadcast band, one can always buy one for a wedding anniversary.

There have been earlier PLL receivers but the Japanese engineers are continually seeking to make improvements, either to circuitry or to appearances. The latest effort from Kenwood has a measure of both.

The main visual improvements are achieved by the presentation of a clean and uncluttered panel layout, an easy-to-read yellow digital readout, a front facing loudspeaker, and a decent sized tuning knob.

CIRCUITS

Coverage is from 150kHz to 30MHz with AM, SSB, and CW reception.

Power is provided either from an internal 110v to 240v power supply or an external 13.8v source.

A 30-position switch fulfils two functions: it selects one of the six bandpass inputs filters and it provides the 1000kHz ranges. The receiver input filters are designed at 500 ohms impedance. A broadband matching transformer is connected to the 50 ohm inputs.

Therefore as all the inputs are in parallel it is better to use only one antenna at a time.

The receiver uses three intermediate frequencies. After the bandpass filtering there is some amplification before the signals are first up-converted to 40.455MHz. The intermodulation capability of the pre-amplifier is limited; this shows up particularly on the 150kHz to 1000kHz range where broadcast stations chop up the low frequency beacon reception.

The second push-pull mixer feeds a monolithic filter at 10.455MHz from which a dual gate mos-fet convertor to 455kHz feeds a noise blanker and the main 6kHz "wide" and 2.7kHz "narrow" filters.

The SSB and CW signal is a nominal 2.7kHz which provides crisp and satisfactory sound, the AM-wide at 6kHz is a good spacing. Both the shape factors and the ultimate rejection of these filters lie in the "home entertainment" rather than the professional categories.

THE RECEIVER

A number of small modifications had to be undertaken on receipt of the receiver. The 13.8v socket had to be installed and wired to the phase-lock loop board. (The information supplied was for a different model.) It is considered that the average ham would have had trouble as the solution involved reading the circuit diagrams with a powerful magnifying glass and then locating the associated componentry on the underside of the board. Once found it was easy to snap the no-solder connector in place.

The next adjustment was to set the S-meter control so that it was not permanently against the stop on strong signals. This control, R5, is on the top PCB and is a pre-set type, labelled "set S9". The method used here is to connect your main 80 metres antenna and tuning unit to the R600's S0239 input.

A strong signal (at my QTH I used ZL2BT) is used to set 40 over 9. A check shows that a 50 microvolt source will also produce S9 on 3.8MHz in the SSB position. These "magic meters" are only indicators and a proper RST report requires use of ears and intelligence.

Finally, clips must be fitted to the battery harness, which is diode protected against accidental reversal.

UP FRONT

The main tuning drives a VFO between 3545 and 2545kHz. After a couple of minutes warm-up the stability is good.

Frequency is displayed from yellow light emitting diode segments of adequate size. The read-out suffers from making no adjustment between upper and lower sidebands, and is approximately 2 counts wrong on each. Correct frequency is displayed on amplitude modulation and CW is pretty near correct, allowing for the note chosen. From time to time the flickering of the last digit is annoying.

Other controls are the 20dB attenuator (relay controlled) and a must for frequencies below broadcast and for local nets, plus a noise blanker in the SSB mode but is less effective on shortwave broadcast stations. They also provide a tone control for the XYL to play with.

CONCLUSION

With "73 active devices and 44 diodes" no shack can afford to be without one. The R600 also fills a need for an all purpose (it covers all the CB bands) receiver and monitor. While the receiver performs adequately for its price range it is no substitute for a good transceiver or a Hi Fi tuner. If one were forced to make a single criticism, it would be of the soft front end.

On the other hand, the principal feature is the tidy internal layout and the uncluttered and functional appearance of the cabinet. Kenwood must be congratulated.

SANGSTER SPECIAL

by L. BOYLE, ZL2BGE

Early in 1976 having acquired by choice a taste for CW operation as the result of DX activity on six metres it was only logical that I should compete in the next Sangster Shield contest. The question soon arose however, of equipment as I did not have a suitable receiver and low power transmitter and there are problems trying to throttle an FT101B back to 5 watts DC input as required by the rules of the contest.

The ideal approach seemed to be that of using my FT101B with the finals disabled and utilising an outboard PA stage and thereby retainining all the facilities of the main rig such as transceive operation, 600 Hz filter, VOX type operation etc. The problem was how to do it.

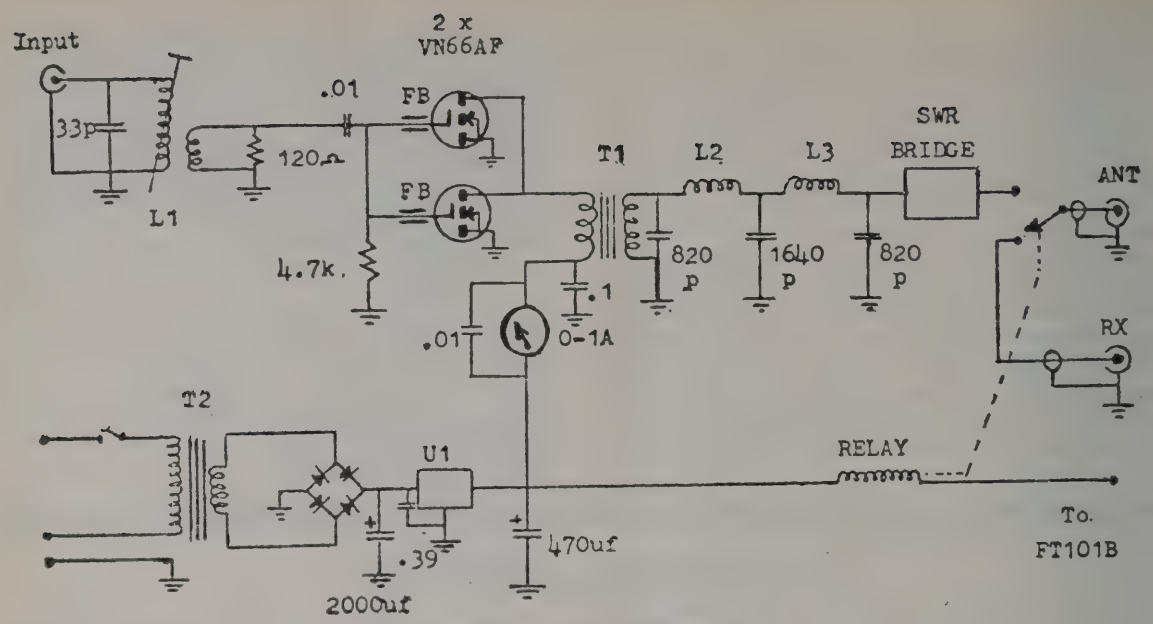
Amateur radio is a hobby for me and as I am not technically qualified or trained as such, my treatment of the finer theoretical points must necessarily be brief and the approach I adopt follows the traditional "black box" concept rather than what is inside the device and why it works. With this limitation in mind, I will describe my efforts to build and use a simple stable QRP PA stage.

I started off using four BFY51 transistors in a circuit based on the 160 metre transmitter in the *RSGB Handbook* (4th Edition page 6.49) and progressed to a circuit using two BD 123 transistors which unfortunately exhibited a tendency to self destruct without warning from time to time. However, the advent of VMOS power FET's and their easy availability showed great promise. After obtaining and studying the data on these devices I purchased some to experiment with.

Power FET's have a decided advantage over power bipolar transistors as they are virtually indestructible when handled carefully. They do not go into thermal runaway, are not subject to secondary breakdown and are immune to the potentially damaging effects of operating into incorrect loads. Anything from a dead short to an open circuit load will not harm a VMOS power FET. Damage can occur however as a result of excessive operating voltages on the gate or drain, or heavy drain current exceeding the dissipation rating for the particular device. Excessive heat should also be avoided.

About this time a circuit appeared in *Practical Wireless* (July 1979) for a 160 metre AM transmitter. The ideas contained in this article were used as a basis for an 80 metre transceiver in which I proved the suitability of the VMOS devices for use in a PA stage. This stage of the transceiver demonstrated a high degree of stability, ease of tuning and operation, something not evident in the earlier designs.

As the result of the work done the next step was to adapt the PA stage to the FT101B and the end result is shown in the circuit diagram.



VMOS Power FET Amplifier.

Two VN66AF devices are paralleled and in the circuit shown can easily be driven to over 8 watts DC input. When used in parallel no ballasting resistors or thermal matching networks are needed because the currents tend to equalise. If one device starts to draw more current it heats up more which causes it to turn off thereby conducting less current than before? In addition, because of the excellent high frequency response of these devices ferrite beads or small value resistors (100-1000 ohms) in series with each gate are necessary to suppress spurious VHF oscillations.

The input coil is not critical and happened to be on hand. The low RF output socket on the FT101B is at high impedance and the coil provides a low impedance match to the VN66AF FETs. The 120 ohm resistor was arbitrarily selected to control the drive to the amplifier and limits it to about 8 watts input with maximum drive from the FT101B.

The transformer in the drain circuit is a two hole balun core used in TV tuners with the turns ratio optimised for a 5 watt power level. The output filter and power supply are quite conventional. Due to the power level involved, I have used a low level SWR bridge as an aid to tuning. The antenna changeover relay is controlled by a spare set of relay contacts available in the FT101B.

For those readers interested from an SSB point of view, it is possible to lift the earthy end of the 4.7K gate resistor and apply enough forward bias to give an indication of drain current. The amplifier then acts as a linear and produces good clean audio.

From practical constructional experience layout does not appear critical, however the usual precautions should be observed in separating input from output in order to maintain stability. The circuit was built on .15" pitch veroboard and is laid out more-or-less just as the circuit is drawn. Heat sinks should be used on the devices to dissipate the heat build-up but bear in mind that the tab is internally connected to the drain so care should be taken with insulation.

Tune up is simple. Connect the amplifier to the FT101B and dummy load. Switch to transmit and apply a small amount of carrier on 3.7MHz. The input coil and the output filter capacitors are adjusted for maximum output. Increase the drive and peak again for maximum output. When driven to 5 watts DC input there should be about 3 watts RF out. I use an antenna tuner at my station so when used on the air the tuner is adjusted for minimum reflected power and the preselect control on the FT101B is adjusted for maximum forward power and that's all there is to it.

Two other local amateurs have built their versions of this amplifier using FT200's as drivers with similar ease and success.

USING THE 18AVT/WB TRAP VERTICAL ANTENNA ON 10.1MHz

by FRED JOHNSON ZL2AMJ

This existing 80, 40, 20, 15 and 10m antenna can be used on 30m with no change needed to the antenna itself — an easy way to get on the band. A simple matching network is used at the transmitter end of the feedline. This is a far easier solution than trying to fabricate a new trap for the existing aerial. The same approach can be used later for the 18 and 24MHz bands.

The diagram shows the configuration I have used. The coil and padder capacitor are mounted in a wedding-cake tin. A luxury model would have a switch to put it in/out of the line!

The actual configuration and values will depend upon the length of the coaxial cable feeder to the antenna itself. (I estimate mine at 15 metres long).

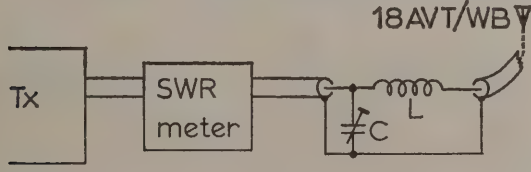
The padder is adjusted for an indication of minimum reflected signal on the SWR meter. The line from the transmitter to the unit will then be "flat" and a 50 ohm load will be presented to the transmitter.

Some lengths of aerial feeder may require a capacitor in place of the coil. Experimentation is needed. The professional approach would be to measure the load seen at the antenna cable input with an impedance bridge and then design a matching unit using a Smith Chart or similar aid. Without ready access to instruments I expected a long trial-and-error session but I hit suitable component values in surprisingly quick time.

An old 3-gang broadcast capacitor (with all sections paralleled) is useful when "mocking-up" a net work to establish values before making the final model.

The capacitor C is a "padder" capacitor from an old broadcast receiver. The approximate value is about 650pF.

The inductor L is 8 turns of heavy copper wire, self-supporting (wound over a pencil).



USING 18AVT TRAP VERTICAL ON 10·1 MHz

AT LAST, FLAT PANELS BEGIN TO COMPETE WITH CRTs

Flat panel displays, until recently used mostly for small displays such as in calculators and watches, are now becoming viable contenders for computer displays and televisions.

Pocket Television Arrives

Four Japanese firms (Hitachi, Matsushita, Shinsu Seiki and Toshiba) have demonstrated prototype flat panel "pocket" televisions, and several of these are expected to be in quantity production soon. Flat panel technologies generally use much less power than traditional cathode ray tubes (CRTs) and provide a lighter and more compact TV. However, Sinclair and RCA are working on modified versions of CRTs, in which the positioning of the CRT components is rearranged to provide a relatively flat profile. Other companies are working on large-screen flat panel TV's to compete with present-day projection televisions.

Flat Screens for the Executive Workstation

One computer terminal (the Q1 Microlite) already has a flat panel display, but most computer terminals will continue to use the less expensive CRT type of display. CRT's will continue to be the dominant display types for computer terminals, but flat panels will be used for portable terminals and also for executive workstations. The executive's desktop represents the most costly real estate around, and it makes sense to pay a premium for flat, compact, non-intrusive displays for higher echelons of workers.

Military Still Sets the Pace

More than half of today's flat panel display market is attributable to orders from the U.S. Army and Navy. Although the militarized flat panel display terminals are very expensive, at $16,000 and up, they are much more likely to survive on a battlefield than are the more delicate and power-hungry CRT displays. Magnavox, Photonics and Litton are leading suppliers of military flat panel displays, and Sharps' Hycom subsidiary is making a major effort to become the leader in hand-held battlefield terminals utilizing an advanced form of electroluminescent flat panel. In addition to their use in portable battlefield terminals, flat panel displays are also used on military ships and helicopters.

An increasing requirement for "top of the line" electronic typewriters is expected to result in a growing market for flat panel displays in these and other types of office automation equipment, although most full-screen word processors will probably continue to be designed around the use of CRTs. (Internat/Resource Development.)

Dialog

WAITING CHANNEL

The great Seimans Company have announced yet another application for the hand-held transceiver. Their latest system allows a restaurant waiter to key in items ordered from the menu. His hand-held gives him a direct link to a computer in the kitchen which displays all requirements to the chef via a VDU, keeps a running total of all bills and files all orders away for later disputes. In addition the computer can also advise the waiter if any items have run out. Now what's the code for "Spam's off?"

Someone on my channel keeps ordering a Charlie Whiskey.

ACCUR-NYM

Our correspondent from the North reports that the Franklin Radio Club (FRC), spurred by the recent editorial by Gerry ZL1BBS, decided to change its name. Many favoured the name of "Franklin Amateur Radio Transmitters" until it was pointed out that its acronym would give members too much to blow off about. Such a series of initials should obviously be reserved for a branch in Wellington, the windy city.

Final choice by Franklin Branch was Franklin Amateur Radio Club, which should be safe until someone finds a reason to tag an E on the end.

ZL3THQ does his world-famous impression of a slimline lightning arrestor.

WONDER WIRELESS

Dialog had the dubious pleasure recently of browsing through the sales-guff brochure of one of those new generation transceivers; you know the ones that immediately double your householder's insurance policy as soon as you get it in the door. At that price the thing ought to have an automatic pilot fitted!

Why do the Japanese always have to count the number of active devices and give the result great prominence. You know what I mean . . .

147 diodes
43 transistors
17½ integrated circuits

So what? Is this information provided to give you an idea of the cost of components required should there be a major failure on the power supply board? And why don't they list the 4796 resistors, 2931 capacitors and 847 coils?

Someone told me that the handbooks are so involved that you have to be a pseudo-intellectual to understand them. But Dialog knows that a pseudo-intellectual is just an intellectual who knows what pseudo means. But I digress . . .

So now you can buy an HF transceiver with 20 memories, guaranteed to give you an inferiority complex because it has 19 more than you. And with all the compulsory options you have on board it certainly doesn't make them easier to operate. However one such transceiver boasts a fantastic feature:

"Full control from the front panel"

What will they think of next! And have you seen the front panel? Rumour has it that one transceiver is used for instrument approach training for 747 pilots.

WATER-FIRED

From a usually reliable source we have been advised of the discovery of a new fire fighting agent known as W.A.T.E.R. (Wonderful and Total Extinguishing Resource). It is particularly suitable for dealing with fires in buildings, timber yards and warehouses, and is fairly cheap to produce. It is intended that quantities of about five million litres be stored in open ponds or reservoirs near urban areas and installations of high fire risk.

W.A.T.E.R. is already encountering strong opposition from safety and environmental groups. One group member has pointed out that if anyone immersed his head in a bucket of W.A.T.E.R. it would prove fatal in as little as three minutes. Each of the proposed reservoirs will contain enough W.A.T.E.R. to fill half a million 10 litre buckets. As each bucketful could be used a hundred or more times, there is enough W.A.T.E.R. in one reservoir to kill the entire population of Australia, N.Z. and one or two S.E. Asian countries.

Did we know, asked a Fire Brigade spokesman, what would happen to this new medium when it was exposed to intense heat? It had been reported that W.A.T.E.R. was a constituent of beer. Did this mean that the firemen would be intoxicated by the fumes?

The Friends of the World said that they had obtained a sample of W.A.T.E.R. and found it made clothes shrink. "If it did this to cotton, what would it do to men?" they ask.

In Parliament, the Prime Minister was asked if he would prohibit the manufacture and storage of this lethal new material. A full investigation was needed he replied, and the Major Hazards Group would be asked to prepare a report as a matter of urgency. (Puregas)

GALBREATH PROJECTS

GALBREATH PROJECTS PRESENT THEIR LATEST KIT
THE MSH 1

THE MODERN MODULAR SHACK

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Free Delivery To Your Nearest State Highway

NAREC 50

NAPIER JUNE 4-7 1982

1982 is rolling along. To save yourself $5 per person on the registration fee you must have it in my May 1st. The Registration Form was in the January/February "Break-in" and additional copies can be obtained from "Registration, Narec 50, P.O. Box 50, Napier".

The Narec 50 Programme is:—

FRIDAY 4 JUNE

2 pm	Talk-ins commence ZL2ABJ, 725 Taraponui, 670 Kahuranaki.
4–11 pm	Registrations, Trading Tables, Trade Displays, Static Displays.
7–11 pm	Gather for Refreshments, Hot Soup, etc.

SATURDAY 5 JUNE

8 am	Registrations.
9 am	Assemble for Official Opening of NAREC 50.
10.30 am	NZART AGM.
7 pm	Pre-Dinner Drinks.
7.30 pm	NAREC 50 Dinner and Dance.
	ALTERNATIVES—
10.30 pm	Demonstrations.
1 pm	Visit Marineland and Aquarium.
1 pm	Bus Trip including Winery.

SUNDAY 6 JUNE

9 am	AREC and WARO Meetings.
10.30 am	OTC AGM.
1–3.30 pm	Mobile Rally (2m and 40m).
7 pm	NAREC 50 Social Evening. VHF, DX and NRTS Forums during Sunday.
	ALTERNATIVES—
10.30 am	Demonstrations.
1 pm	Visit Marineland and Aquarium.
1 pm	Bus Trip including Winery.
9 am to 5 pm	Technical Demonstrations and Lectures. Hidden Transmitter Hunt.

The NAREC 50 Dinner and Dance will feature one of Napier's top bands, catering for all age groups. While for the Sunday Social we have engaged a professional entertainment group. If your Group would like a spot on the programme as was done a few years ago, we would like to hear from you. Get your act together and contact Bernie ZL2BFT.

For the competitive types the Mobile Rally on 2 and 40 metres, the Hidden Transmitter Hunt on 2 metres and the "Home Brew" Contest give you a chance to try your skills.

Throughout Sunday there will be a series of Technical Demonstrations and Lectures covering subjects you always wanted to know more about. There will also be the usual Forums and Meetings. Look for a detailed update in the next "Break-in".

For those not so interested in radio, there are the Bus Trips, Demonstrations and Visits to Marineland and the Aquarium. There will be Static Displays, Trade Displays, and YL's and OM's Trading Tables.

We hope you will be able to join us for refreshments on Friday evening and on Monday morning. We would like to remind you that NAREC 50 is for **YOU** — Let us know your wishes and we'll see what we can do for you. Remember the theme of NAREC 50 — 50 years of AREC. To get with it how about taking part in our Award?

NAREC 50 AWARD

To obtain this attractive award NZART members and overseas amateurs contact five Napier stations plus the Napier Branch station ZL2ABJ during the period 1 May to 4 June 1982. Any band and mode can be used for the contacts but Net and Repeater contacts do not qualify. Listeners report 5 Napier stations plus ZL2ABJ.

Send a summary of the contacts (Call Sign, Time, Date, Band) certified by one other member of NZART (or another overseas amateur in the case of overseas stations) to Award, NAREC 50, P.O. Box 50, Napier, by 30 June, 1982.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

I.T.N.O.T.G.A.O.T.U.

CONFERENCE 1982

A meeting has been tentatively arranged subject to replies for Friday 4 June 1982. Ladies included. To facilitate catering and for further details please write including SAE as soon as possible to Des 2VR, P.O. Box 50, Napier.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

NAREC 50 "HOME BREW" COMPETITION

RULES AND CONDITIONS:

1. Open to all NZART members attending NAREC 50.
2. No entry fee.
3. Open to any piece of electronic equipment, whether radio, test equipment or for general use in or around the shack.
4. The entry must be finished and working. If it is to be installed inside another piece of equipment, drawings and/or photographs must accompany the entry showing its installation. If a free-standing unit, it must be properly cased and working.
5. All entries must be the constructors own work and may be from published articles and circuits from any of the usual electronic or radio magazines.
6. All entries to be legally useable in New Zealand and if radio must conform to the radio regulations as they affect the amateur service.
7. The committee will take every care of entries, but cannot be responsible for any loss or damage outside of their control.
8. Kitsets as supplied by commercial kitset manufacturers are not eligible.
9. Judging will be by a panel and their decision will be final.

It is hoped to provide a substantial prize or prizes depending on entries.

Don't leave your registration — you may be too late for accommodation — there is a large conference of bottle collectors in the city and the national CB gathering is being held nearby.

Stamped NAREC 50 commemorative envelopes will be available for $1 in the wool exchange foyer and a post box will be available there for the special date stamping after conference.

ZL2AHC

NOW AVAILABLE AT TRICITY HOUSE . . . .

TOYO RF THRU-LINE WATT METER — Model T435 for Professional Work

Specifications:

Frequency Range	: 144MHz-435MHz
Power Range	: FWD 200w : 20w : REV 20w : 5w
Impedance	: 50 ohm
Loss	: Less than 0.03dB
Sockets	: N-type
Dimensions	: 87 (H) x 190 (W) x 84 (D) m/m 760g.

Price **$102.57**

☆ ☆ ☆

TOYO SWR and POWER METER — Model YM-11E

The new YM-11E SWR RF power meter is a high quality instrument of professional quality. SWR and Power are displayed on two independent meters.

Specifications:

Frequency Range	: 3.5 to 150MHz
Circuit System	: Directional Coupling System
SWR Measuring Range	: 1-3 (Direct Reading)
Power Range	: 20/200 watts
Impedance	: 50 ohm
Connectors	: SO239
Dimensions	: 190(W) x 84(H) x 87(D)

Price **$62.15**

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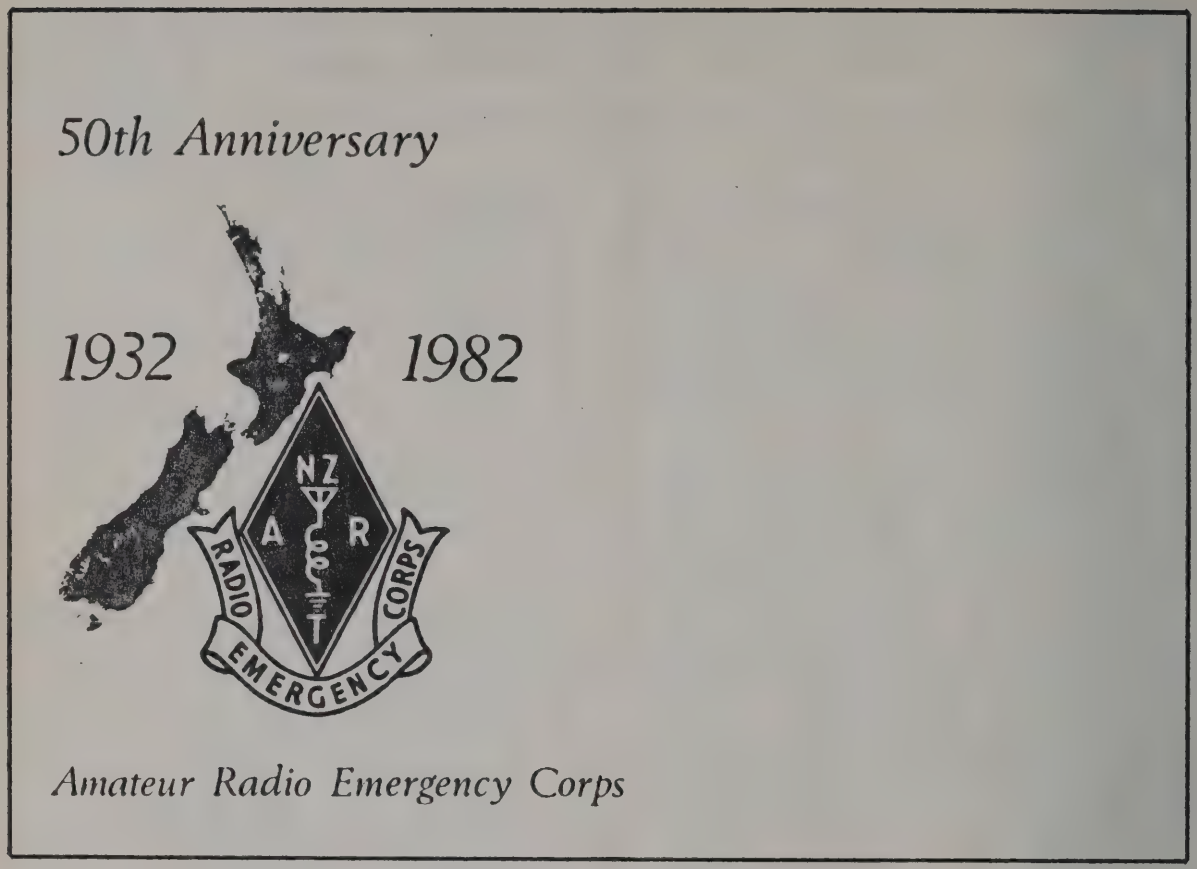

Specimen of the two colour Commemorative Cover.

In conjunction with the Annual Conference of the New Zealand Association of Radio Transmitters, a Commemorative Philatelic Cover is being produced (limited edition), and will cost as follows:

Envelopes stamped and addressed ..... $1.00 each

If collectors wish, the Commemorative Cover can be returned in an outer envelope, upon the payment of an additional handling fee, and the cost of return postage as indicated here.

By letter mail ..... $1.25 each

Unserviced envelopes ..... $0.70 each

(These envelopes MUST be returned under cover to the Chief Postmaster, Napier, endorsed "Covers for special date stamp" or to NAREC, P.O. Box 50, Napier, before 1 June, 1982.)

Applications MUST be received by 30 April, 1982, so that processing can be completed before the posting date. A special Commemorative Date Stamp will be used at the Chief Post Office, Napier, on Tuesday, 8 June, 1982, to cancel the special covers, and any other mail sent for the special date stamp.

For further information and/or applications, please contact NAREC 50, P.O. Box 50, Napier, or NAREC 50, P.O. Box 475, Napier.

New Zealand Association of Radio Transmitters Inc.

NOTICE IS HEREBY GIVEN that the 56th Annual Conference of the Association will be held in Napier on Saturday, 5th June, 1982.

BUSINESS

1. Welcome to Visitors.
2. Official Opening.
3. Silent Keys.
4. Apologies.
5. Subsitute Delegates.
6. Roll Call.
7. Voting Procedure.
8. Report on Council Business.
9. Confirmation of Minutes of 1981 Annual Conference.
10. Presentation of Annual Accounts and Balance Sheet for 1981.
11. Appointment of Auditor to the Association.
12. President's Report.
13. General Secretary's Report.
14. Treasurer's Report.
15. "Break-in" Editor's Report.
16. AREC Report.
17. Post Office Liaison Report.
18. FMWG Report.
19. Overseas Liaison Report.
20. Radio Training Scheme Report.
21. Intruder Watch Report.
22. Contest and Awards Report.
23. Remits.
24. Fixing of Venue for 1983 Conference.
25. General Business.

George Blackwell, General Secretary.

xxxx

General Secretary's Report

It is my pleasure to present this report to members, of the affairs of the Association, for the year ending 31st December, 1981.

Membership

Figures at the end of 1981 have shown an increase in membership over the previous year. For the various categories as at 31st December, 1981, with comparative figures for 1980 are:

Categories	1980	1981
Transmitting	2982	3194
Non Transmitting	658	627
Overseas Members	196	192
	3836	4013

The increase is 212 Transmitting and a decrease of 31 Non Transmitting members. The Non Transmitting decrease is caused by a large number transferring to the Transmitting category. This shows the good work being done by Branch Classes.

The Branches of the Association should make every endeavour to make their members financial with Headquarters and attract others to join, thus ensuring a strong membership.

Unfortunately we lose a number of members through deaths, old age etc. Some who have not renewed so far this year will do so on receiving the reminder notice sent out in March.

Financial Accounts

The Treasurers Report and Financial Statement appear subsequently in this issue.

All means possible have been used to keep costs down. Rising costs in printing, postages etc are something we have to live with. The increase in postage for "Break-in" alone is approximately $200 per month.

Some $800 was saved this year in not posting receipts, unless requested.

Publications

Sales have been steady though a fall off caused by the current recession and shortage of cash. Several manuals are now getting old and do not have the same demand as before. The varying exchange rate hardening against the N.Z. currency also reflects on the lower profit.

Computerisation

As the membership record is now in the computer, members were asked to send in a separate cheque for their subscriptions so that entry can go straight into the computer record. Most members helped by sending in a separate cheque and this was appreciated at Headquarters with a considerable saving in time with processing.

Conclusion

In all a satisfactory year for your Association. All Departments are working well. The FMWG have had a large task in the Repeater change over and that is now coming into effect.

I would like to place on record my thanks to the Treasurer, George Walker and to his staff, who have been of able assistance when called upon.

This is my last report as General Secretary, as I am retiring at the end of June. First coming on Council in 1960/64, Treasurer and Publications Manager 1964/74, then General Secretary 1974/82, I have had over 20 years of service to your Association. I have enjoyed the work and will miss the contacts and cheerful correspondence received over the past years. Many thanks to those members. I wish your new General Secretary, Neville Copeland, ZL2AKV, all the best in his new position.

George Blackwell, ZL3NT,
General Secretary.

Treasurer's Report

It is my pleasure to report to members on the financial affairs of the Association for the year ended 31 December 1981. The Annual Accounts for that year appear subsequently in this issue, comprising the "Break-in" Revenue Account, Publications Account, Income and Expenditure Account, A.R.E.C. Imprest Account and Balance Sheet. To assist you with your study of these Accounts I would like to make the following comments:

Financial Result

The result for the year has been a disappointing excess of Expenditure over Income, of $7,919. This is a reversal on the previous two years, and is directly attributable to the large amount spent on producing "Break-in" for the year.

The profit derived on Publications was up, but the $20,000 extra in printing costs for "Break-in" plus extra costs in postages and blocks was not recovered and meant an increased cost of almost $23,000 over the previous year.

As a result of the deficit for the year, our Accumulated Funds have been reduced by almost $8,000, but we still have substantial Assets available.

"Break-in" Revenue Account

Advertising receipts increased by approximately $1,300 during the year, while sales of Callbooks

and "Break-in"s also increased, but the substantial increase of almost $25,000 in the expenses of publishing "Break-in" have meant a substantial rise in the cost of the magazine. This year's rise follows a cost increase of $12,500 last year, and members must ask themselves how much they are prepared to spend on producing what is an excellent magazine.

A.R.E.C. Account

This shows the Grant expected to be received from Government towards the A.R.E.C. costs, and the result for this year's operations has been a run down of just over $1,300 in funds carried forward, compared with last year.

Publications Account

The value of sales of publications has increased by almost 15 per cent over last year, and the net profit after costs has increased by almost $1,400. This can be regarded as a very satisfactory result. The value of stock on hand at the end of the year has gone up, mainly as a result of the higher holding of Basic Radio Training Manuals, which continue to sell well.

Income and Expenditure Account

The gross income for this year shows an increase of 21 per cent over that of last year, and apart from "Break-in" costs, the administrative overheads of running the Association have increased by $7,160 during the course of the year, which represents a 31 per cent increase over those of last year. The various items of major increase include Ballot Expenses, Printing and Stationery, Secretary's and Treasurer's Remuneration, and F.M.W.G. Expenses.

The two surpluses earned on the last two Conventions have made welcome contributions to the income of the Association during the year.

Balance Sheet

As a result of the deficit for the year, our total funds have been depleted.

Our total Current Assets have increased, but so have our total Current Liabilities. However, the increase in Current Liabilities is substantially in the area of Subscriptions in Advance, which of course will become income in the new financial year starting 1 January 1982.

Fixed Assets show a minor increase as a result of one half of the cost of the transceiver purchased for the A.R.E.C. administration.

Our investments remain the same as they were last year.

Conclusion

Although the result of the year was a disappointing deficit, it is not as if nothing has been achieved as a compensation for that deficit, and I think members will agree that the high standard of "Break-in" is well worth the cost, but that the cost has to be kept in proportion to subscriptions being paid. It will be necessary to keep the cost of "Break-in" under very tight control in the forthcoming year, and to endeavour to re-coup the loss suffered this year.

We are now entering the period of high expenditure relative to the Manilla Conference, and the Association is sufficiently liquid to handle that without any problems.

This will be my last year as Treasurer, as consequent on the appointment of the new General Secretary, it is appropriate to change the Treasurer to someone who will be more closely associated with the new General Secretary.

After being involved with the Association since 1967, I will find it hard to cease my involvement. I have seen many changes and improvements over the past fifteen years, and I hope that the moves now taken will be further steps in the development of the Association. I am confident that the new General Secretary will become the focal point of an Association that increases in strength and international stature.

I will follow the progress and growth of the Association with continuing interest, and look forward to attending my final Conference in Napier this year. In the meantime, if anyone has any aspect of the Accounts which they wish to discuss with me, please do not hesitate to contact me at Headquarters.

George Walker,
Treasurer.

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Editor's Report

The year has run smoothly with a continual supply of technical material coming to hand.

The number of pages in "Break-in" has been high, averaging 64 pages per issue. The number of copies printed each month is also a record high at 4100.

During the year several issues have highlighted specific topics. In particular the October "Break-in" featured BCI/TVI matters and the November issue was kept in keeping with the United Nations decreed "International Year of Disabled Persons".

The Christchurch based "Break-in" editorial team continues to work well. In particular a big

thanks to the enthusiastic efforts of Craig ZL3TLB. Also mention must be made of the work done by ZL3AFV, ZL3SL and ZL3CP.

Two new editors have joined the team who produce the regular features that appear in "Break-in":

Ron Murphy ZL1AMM has very ably taken over the "DX-ing" column from Arthur Law ZL2HE who has retired after producing the feature for many years.

Also Iain Morrison ZL1TF has volunteered to produce the "VHF Scene". Vaughan Henderson ZL1TGC who previously compiled the VHF notes is now the author of "Satellite News".

Excellent support is being received from our advertisers. Several are regularly requiring 3 to 4 pages of advertising per issue. I would like to think that this is an indication of the popularity of the magazine, which in turn is a reflection of the calibre of material being supplied by the many contributors to "Break-in".

The OC AREC Report

The Corps maintained a steady standard of performance in SAREX, practices and actual call-outs during the year.

Police and SAR continue to express satisfaction with AREC assistance.

AREC Field Day on 12 April 1981 saw 50 (out of 67) sections represented by 338 operators. In a network of 227 stations, 6194 messages were transmitted during the four hour operating period. Each station handled an average of 27.28 messages, an increase of 3.3% on the 1980 total.

One new section was formed at Te Aroha with the new AREC callsign of ZL6EB, another at Orewa (Hibiscus Coast) with the callsign ZL6EC. New callsigns allocations for Feilding, ZL7EA and Hawera ZL7EB were also approved by the Post Office.

New rules for the conduct of AREC were approved by Council at Conference 1981 and promulgated in "Break-in" for November 1981.

Search and Rescue

Reports printed in the AREC columns of "Break-in" give a general indication of section activity. Unfortunately not all sections are sending reports of their activities either to our scribe ZL2BHF/ZL2EXA or to me and so the record is incompete.

As noted last year, some sections are more active than others because of occurrences in their localities. This year, Rotorua in the North Island and Christchurch in the South Island received the greatest number of alerts. Sections not often called on however, rose nobly to the occasion when called out.

The increased costs for maintenance of equipment, purchase, postage and general administration were recognised by SAR in an increased grant for 1981 of $4750.

Equipment

The two AWA TR105A's bought for the Wellington AREC have been put into use on several occasions. Personnel who may be called on to operate them in the field have been given the chance to familiarise themselves with the equipment. In addition a series of training sessions have been conducted by ZL2AYY/ZL2EXB in the Wellington area for AREC, NZART Branches and for Tramping Clubs.

The additional 30 TR105A's for FSHQ Base use have been ordered and delivery is expected in May or June 1982, after MOT acceptance tests are complete.

No further progress has been made in the developments of AREC prototype production drawings or PC layouts.

The IC720A transceiver bought for AREC has been suitably modified and has been passed around amongst those likely to be asked to use it in emergency for familiarisation. It is working well.

Civil Defence

Some confusion arose during the year as a result of the publication of a new Civil Defence Communications Plan. The new plan resulted in the transfer of "command" channels which would be operated by non-amateur CD personnel, out of the 146-147MHz section of the 2 metre amateur band. Some amateurs were concerned that amateurs were now being "left out" of Civil Defence.

It is my view that AREC, using amateurs, has a definite role in CD communications, providing "traffic" channels using amateur equipment inside amateur bands as well as in manning "command" channels when amateurs fill CD official posts.

Appreciation

I should like again to record my thanks for all the assistance given me during the year. Officials of the Post Office, Police, Ministry of Transport and Ministry of Civil Defence have been always helpful and courteous. Jim Meachen ZL2BHF/ZL2EXA and Terry Waghorn

ZL2AYY/ZL2EXB have given freely of their time and energies. Area Officers Grev Poulton ZL1MP/ZL1EX, Don Mackay ZL3RW/ZL3EX and Ron Kingston ZL4MK/ZL4EX have been staunch in their support. Fred Johnson ZL2AMJ and David Gorman ZL2IV have come to the rescue at times, and Doug Gorman ZL2IY has always been ready to advise and assist.

Thanks also to the Section Leaders and the members of the Corps whose efforts have been given so freely.

In its fiftieth year, the Corps has not had to meet a disaster such as that at Napier in 1931 which indirectly brought the Corps into being. I believe that, if today, another such disaster were to strike, we are better organised and equipped than ever before.

R. S. H. Morgan, ZL2GQ/ZL2EX,
Officer Commanding.

NZART Post Office Liaison Officer Report

It has been a bumper year. Correspondence to and from the NZPO totals 122 letters (c.f. 67 in 1980) and this does not include the monthly Intruder Watch reports.

It has been the year for many major matters. The Beacon and Repeater Policy (B-I August 1981), the TVI Code of Practice (B-I October 1981), the 2-metre bandplan and its implementation processes, a review of the 50.0 to 50.15 MHz sharing arrangement and a request to extend the 10MHz band from 10.15 to 10.20MHz have required much time and effort to collate and present for consideration.

The largest submission to NZPO was 78 pages —an updated record of all repeaters and beacons for checking the NZPO records. This was the result of an FMWG survey to collate updated information for a data base.

Changes obtained include the use of FSK on band above 28MHz ("Break-in" September 1981), access to the 10MHz band for Grade 1 operators, access to 6 metres for Grade 3 operators, and the use of random-generated 5-letter groups in broadcasts from morse practice stations with speech-synthesised readout for checking.

Fifty letters exchanged concern repeaters and beacons. Twelve were on AREC topics—call-signs, approval for exercises and so on. Other topics included approval for jamborees, Frequency Measuring Contest, remit topics from the 1981 NZART Auckland Conference, and many miscellaneous items. Even so, 21 items are yet to be finalised.

Contact with the NZPO has been by mail, telephone, and frequent visits. The work is becoming an increasingly specialised part of amateur radio.

Enquiries from Branches on licence and regulation matters indicate a considerable interest in this work. It is pleasing to receive letters seeking assistance or clarification of various points.

Several incidents during the year highlight the danger of direct approaches to the Postmaster-General or the Director-General. These direct approaches have short-circuited and destroyed work being done by the NZART Liaison Officer at working level in POHQ. Direct approaches result in a regulation reply. Non-members produced incidents which could have had restrictive results for our members. The value of NZART membership to a New Zealand radio amateur cannot be over-emphasised because without it an amateur does not view the official correspondence and other matters in "Break-in" and cannot realise the current NZART liaison underway with NZPO.

Thanks and appreciation are extended to the Director-General of the New Zealand Post Office and his staff for the attention and consideration that all NZART and amateur radio matters have received. It is especially appreciated that the band at 10.1MHz and the introduction of Grade 3 operators to 6 metres were both effective from 1 January 1982—the earliest that these changes could be made.

ZL2AMJ.

NZART Frequency Management Working Group Report

This is the first full year of the operation of the Group. Activity has been intense and as present items conclude more time can be given to study each Amateur Band and to formulate recommendations for Council.

The Group's activities have included a wide range of frequency management topics as shown in the following list of major activities:

1. The Implementation Plan for 2m FM Repeater change-over was prepared and actioned with follow-up action where necessary.
2. The selection, after considerable research and study, of the 2m simplex frequencies.

3. A weekend meeting of the Group was held at Raumati South in March.
4. Revision of the Repeater and Beacon Policy. The policy now includes Short-Term Supplementary-purpose (STSP) repeaters and the use of tones on repeaters.
5. A complete check on repeater and beacon details has been made so that the FMWG and NZPO records could be updated and aligned.
6. A paper on the band 50 to 54MHz was developed and has been submitted via Council to NZPO.
7. A study of the band at 10.10 to 10.20MHz was carried out to justify the claim for the extra allocation of 10.15 to 10.20MHz. This paper has also been submitted o the NZPO.
8. The frequencies for the AMSAT Phase 3B Satellites have been studied and comments sent to AMSAT-DL.
9. "A Code of Practice for Broadcast and Television Interference Cases" has been finalised and published.
10. Policies on selected Amateur Bands with recommendations to NZART Council have been developed.
11. Research and a call for comment from Branches on a proposed new standard for FM repeaters.
12. The complete revision and streamlining of the procedure for applications for Fixed Amateur Stations.
13. The establishment of a policy for the assignments of frequencies for beacons.
14. During the year 1981 the following new Fixed Amateur Stations were issued permits to establish:
    2m repeaters = 10
    70cm repeaters = 2
    2m beacons = 4
    70cm beacons = 5
    Short-term Supplementary-purpose (STSP) repeaters = 2
    A 2m linear repeater and an ATV repeater are under consideration.

The working papers sent out to accomplish the above form a stack 40mm thick. This does not include replies and other correspondence handled.

It must be recorded that a long-serving member of the VHF/UHF Co-ordinating Committee and a member of the FMWG retired at the end of the year. Ian Brown ZL1TAT has been with the VHF/UHF Co-ordinating Committee since the beginning and he has contributed more than his share to the present FMWG. Thank you Ian for all the work done and assistance given.

Thanks are extended to NZART Branches and NZART members who have contributed to the activities of the Frequency Management Working Group during 1981.

J. F. C. Johnson, ZL2AMJ,
Chairman, on behalf of FMWG.

NZART Overseas Liaison Report

All material received from overseas is circulated to the Overseas Committee and considerable internal correspondence results.

Many enquiries from overseas have been attended to both from societies seeking details of how New Zealand does things and from individual amateurs asking about licence details. These latter enquiries will in future be routed through the Reciprocal Licence Bureau.

The usual returns have been sent to IARU Headquarters.

The Special Projects Group has got off to a good start. Approval for this was given at Conference in Auckland. The object is to earn money which will be used to develop an HF transceiver for supply to those amateurs in Region 3 societies who cannot afford the simplest equipment to get on the air. The cost to the Association has been virtually nil because a couple of members were prepared to lend money to finance the two initial projects—an instrument case and the G6CJ CW filter—and others have come forward to assist in other ways.

Liaison with other societies included matters connected with the introduction of the 10.1MHz band, particularly with the Wireless Institute of Australia.

The IARU column has tried to keep members abreast of overseas developments but the sheer volume of correspondence prohibits other than summaries being given.

The major overseas event, the IARU Region 1 Conference held in Brighton in April, was attended by David Rankin 9V1RH, Secretary IARU Region 3 Association as an observer.

IARU suffered a serious loss with the death of G2BVN, Roy Stevens MBE, who for many years was the dynamic secretary of Region 1.

Proposals first put forward at Bangkok in 1978 to reorganise the Headquarters of IARU to make it truly international and more democratic are being followed up.

ZL1HV, ZL2AMJ, ZL2NN.

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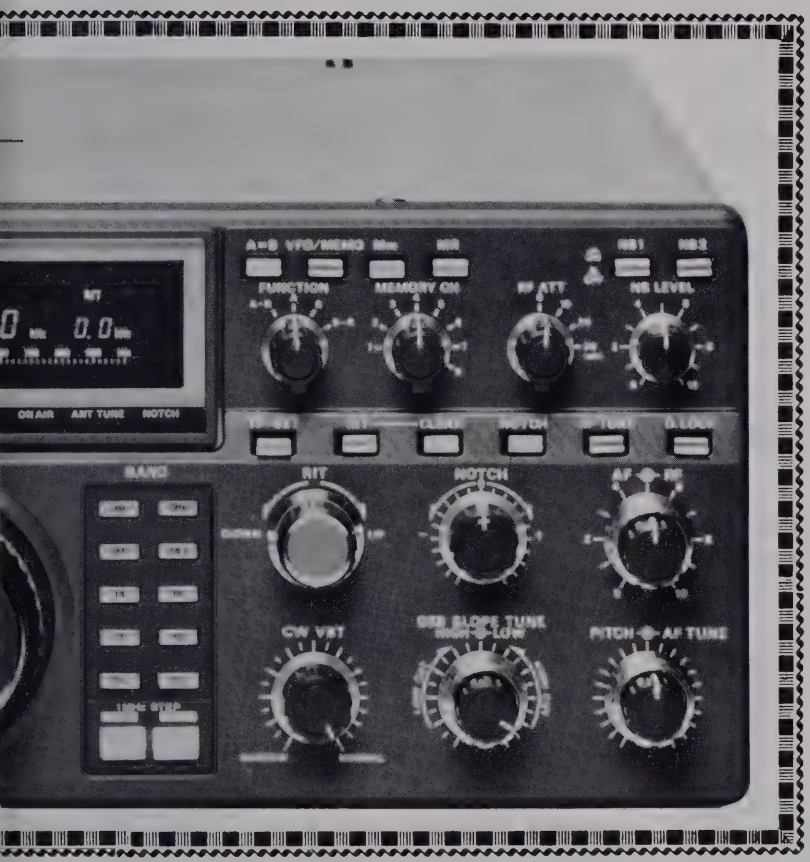

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RONICS. PHONE 515-630.
HOBBIES. PHONE 778-102.

TS930S SPECIFICATIONS

TS-930S (HF TRANSCEIVER)

(GENERAL)

Transmitter Frequency Range:
160m band 1.8 ~ 2.0MHz
80m band 3.5 ~ 4.0MHz
40m band 7.0 ~ 7.3MHz
*30m band 10.1 ~ 10.15MHz
(10MHz W V)
20m band 14.0 ~ 14.35MHz
*17m band 18.068 ~ 18.168MHz
15m band 21.0 ~ 21.45MHz
*12m band 24.89 ~ 24.99MHz
10m band 28.0 ~ 29.7MHz
*Receiving only. (Transmission on these bands is possible with a small modification).

Receiver Frequency Range:
150kHz ~ 30MHz.

Mode:
A3J (LSB, USB), A1 (CW), F1 (FSK), A3 (AM).

Antenna Impedance:
50Ω, 20 ~ 150Ω with antenna tuner (TX only).

Power Requirement:
120/220/240V AC, 50/60Hz.

Power Consumption:
TX = 510W (Max.)
RX = 80W.

Dimensions:
374 (15.0) W x 141 (5.6) H x 350 (14.0) D mm (inch).

Weight:
18.5kg (40.7lbs.) approx. (with antenna tuner)
16.8kg (37.0lbs.) approx. (without antenna tuner).

(TRANSMITTER)

Final Power Input:
SSB/CW = 250W, FSK = 140W,
AM = 25W (Output Power).

Carrier Suppression:
Better than 40dB.

Unwanted Sideband Suppression:
Better than 50dB.

Harmonic Radiation:
Less than −40dB.

Audio Frequency Response:
400 ~ 2,600Hz, within −6dB.

Modulation:
SSB = Balanced modulation
AM = Low level modulation (IF stage).

FSK Shift Width:
170Hz.

Third Order Intermodulation Distortion:
Less than −31dB.

Microphone Impedance:
500Ω and 50kΩ.

(RECEIVER)

Circuitry:
Quadruple conversion system.

Intermediate Frequency:
1st IF = 44.93MHz
2nd IF = 8.83MHz
3rd IF = 455kHz
4th IF = 100kHz.

Sensitivity (at 10dB S/N):
150 ~ 500kHz: Less than 0dBμ (1μV) for SSB, CW and FSK
Less than 20dBμ (10μV) for AM 500kHz ~ 1.8MHz: Less than 12dBμ (4μV) for SSB, CW and FSK
Less than 30dBμ (32μV) for AM 1.8MHz ~ 30MHz: Less than −12dBμ (0.25μV) for SSB, CW and FSK
Less than 6dBμ (2μV) for AM.

Image Ratio:
More than 80dB.

IF Rejection:
More than 70dB.

Selectivity:
SSB, CW, FSK, AM (N) = 2.7kHz (−6dB), 4kHz (−60dB)
AM (W) = 6kHz (−6dB), 18kHz (−60dB).

Variable Bandwidth:
SSB Slope Tune = High-cut; more than 1,500Hz
Low-cut; more than 700Hz
CW VBT = 600Hz ~ 2.4kHz (continuously variable without optional filter).

Frequency Stability:
Within 30Hz during any 30 minutes period after warmup. Within ±200Hz during the first hour after 1 minute of warmup.

Frequency Accuracy:
$\pm 1 \times 10^{-5}$ or better (at normal temperatures).

RIT Variable Range:
±9.99kHz.

Dynamic Range:
100dB (with 500Hz filter).

Intercept Point:
+10dBm (at 14.175MHz).

Notch Filter Attenuation:
More than 40dB (when beat frequency is 1.5kHz).

Audio Output Power:
More than 1.5W/8Ω (with 10% distortion).

Printed by H. W. Bullivant & Co. Ltd., 161-163 Armagh Street, Christchurch.

Radio Training Scheme Report

Again, the main activity was in the field of Morse tapes. 392 cassettes were sent out during the year—an increase of about 50 on the 1980 total. This area of the scheme takes up a lot of time and is very dependent on the availability of high-speed copiers. I cannot check tapes before they go out, and some bad copies are made, but these will be replaced if returned.

The other major activity during the year was the start on re-writing the Basic Radio Training Manual. So far, 5 chapters have been written on to computer disk in preparation for circulation and editing. This will be a fairly slow job as it is very time-consuming and will probably be continuing over the next couple of years. Any comments on format, textural changes, or other areas of the Manual would be welcome.

My stocks of most of the hand-out material are very low, and these will have to be re-written in the near future. I would ask those wanting training manuals to be patient, as time to carry out these activities is somewhat limited at the moment.

My thanks to the Editor for his perseverance during the year, with late copy and other hassles.

Bruce Durdle, ZL2BAM.

Intruder Watch Co-ordinator Report

Approximately five hundred reports on non amateur stations operating in the so-called exclusive amateur bands were reported to the NZPO and the IARU Monitoring Service during the year.

A special six month sampling of "Woodpecker" transmissions was conducted. Analysis of the results indicates that on any given day "Woodpeckers" may be heard "hopping" around anywhere between five and thirty MHz for an average of sixteen hours a day. The analysis also indicates that on average you may expect to suffer from "Woodpecker" interference for two and a half hours a day in both the fifteen and twenty metre bands.

A circular letter sent to all Branches of NZART requesting assistance with "Woodpecker" reports resulted in one Branch only sending in a report. Frankly, a waste of stamps and envelopes, however on a more positive note, the letter and column in "Break-in" were responsible for four people becoming regular reporters on Intruders and a good number of "one off" reports being received.

The continuing blatant disregard of the International Regulations by Russian non amateur stations, such as UMS on 21 032kHz, gives cause for concern. A letter addressed to the Russian Ambassador complaining about UMS was not replied to. Complaints in the form prescribed by the ITU regulations were lodged with the NZPO last September, as far as I am aware this has produced no action, or acknowledgement, to date.

A copy of the new ITU Regulations was received in January. It is disappointing to note the loss of the first 50kHz of the 40 m band as an amateur exclusive band. The "footnoting" of the Fixed Services of 13 countries on an equal basis with the Amateur Service relegates the status of this band to that of a "Shared Band".

The number of C-B intrusions into the ten metre band appears to be increasing. At this "end" it seems to be mainly Japanese and Australian C-B'ers, but possibly from the other "end" the story may be different.

The daily use of frequencies in the fifteen metre band by the Chinese Diplomatic Stations BXT 11, BXT 39, BXT 44 and BXM 62, is a matter which Council may consider worthy of a direct approach to the Chinese Authorities concerned.

The costs of the Intruder Watch remain modest and amount to postage only, approximately $35 per annum.

The Intruder Watch Team consists of ZL4LI (Technical Assistance and Translations) ZL3AZ, ZL2IC, and Mike and Ron who wish to remain anonymous.

The work of these people is supported by others who send in occasional reports. To the Team in particular and the others generally, I say thank you for your efforts over the last year and I look forward to your continuing help.

As I have said before, and now say again, unless and until Amateurs are prepared to help in ridding "our" bands of intruders the present situation will not improve. The proper avenue in which to help is through your Intruder Watch.

R. E. Knowles, ZL1BAD/ZL6IW,
Intruder Watch Co-ordinator.

Let "Break-in" know of your Branch activities.

Contests & Awards Manager Report

1. CONTESTS (i) The long standing schedule of contests was maintained with activity as follows:

	1981	1980
(a) N F D	41	41
(b) Sangster	37	37
(c) Q L F	12	10
(d) Memorial	64	58
(e) Freq. Measuring	48	46

(ii) The 1981 VK/ZL was organised by WIA. The 1982 VK/ZL will be organised by NZART with same rules as for **1980** EXCEPT for increase in points for 80 and 160 metre contacts. Rules were posted to overseas societies at the end of January.

(iii) Degree of detail given in contest rules in "Break-in" might be debatable. Obviously FULL details of NZART activities must be published but with others there can be a variety of opinion from the bare Calendar details to the full un-edited version. To print un-edited material in any area of the magazine is a blantant waste of space and should be avoided—and IS avoided in this column to support Council request re use of space. Finally—personal preferences for various activities favour individual opinions.

(iv) Every effort has been made to accept all contest logs but it would appear that some operators deliberately "tempt providence" with some rough almost illegible log entries. If entries cannot be defintely determined, then the log cannot be scored.

2. AWARDS (i) The following were awarded:

	1981	1980
WAP	90	120
WAZL	*12	*20
WAD	12	3
NZC	*73	*18
NZLA	*6	*3
CJC	*25	*32
ZL1/2/3/4	13	12
ZL80-ZL81	20	32
ENZART	*1	—
Antipodes	3	3
VHFCC	*8	*1
ZLA	4	7
NZA	10	5
MIA	1	1
TIKI	1	1

(*indicates less endorsements.)

(ii) Interest in NZC in particular is being fostered through the activities of Jim Smith KA7APJ and others in the Counties Net.

(iii) There is continuing difficulty with inadequate addresses (sometimes none) and illegible names. The US habit of address on the envelope and none on the "letter" is a trouble maker.

(iv) There was hardly any interest in the formation of an NZART "DXCC". Already there are many varying forms of DXCC throughout the world. With all its faults (real or imagined) the ARRL DXCC must stand supreme.

3. The continuing policy of this department is to provide a contest and awards programme which is consistent in policy and which provides for the enjoyment of those concerned. Not everyone need be involved and yet—some of the first class operating heard in NFD would indicate we have some grand operators. That others can join in with their varying degrees of skill must add strength to our hobby. It is not necessary to be a "triathlon winner"—but, to compete . . . . ah!

4. Some comment must be made on the alleged drop in operating standards. I cannot accept that this is in any major degree due to contests or to awards hunting. Certainly there can be "incidents" when rare DX appears but likewise, incidents occur at bargain counters during sales — "c'est da vie". A more serious situation has developed I believe from the proprietorial attitudes of individuals and net controllers to certain frequencies they prefer to use. To demand the "clear" availability of a channel —sometimes under the cloak of unbecoming threats is quite indefensible. No QSO—whether for award qualification or otherwise is worth this sort of thing.

5. I am grateful for the helpful comments, suggestions and expressions of "understanding" received from many members. Such on-going contacts help to make everything worthwhile . . . and in correct perspective.

Jock White, ZL2GX.

mention

YOU READ IT IN

BREAK-IN

FINANCIAL STATEMENT

Depreciation Schedule

For The Year Ended 31st December, 1981

		Cost to Last Year	Dpre. to Last Year	Opening Book Value	Additions	Depreciation		Closing Book Value
	Office Equipment	50	50					
	Intruder Watch Gear	350	100	250		5 YR SL	50	200
80	Transceivers—AREC	3,495	349	3,146		10% CP	350	2,796
80	Tape Recorder—RTS	167	42	125		25% CP	41	84
80	Cabinet—VHF Comm.	333	33	300		10% CP	34	266
81	Transceiver (½ with AREC)				1,036	10% FY	104	932
		4,395	574	3,821	1,036		579	4,278

Publications Trading Account

For The Year Ended 31st December, 1981

1980 $		1981 $	1981 $
	Sales		
4,748	NZART Publications	6,076	
7,276	ARRL Publications	7,778	
856	CQ Publications & Subscriptions	546	
3,937	RSGB Publications	4,601	
1,589	Radio Publications	1,504	
605	WIA Subscriptions	905	
928	AMSAT Subscriptions	943	
2,042	Ham Radio Subscriptions	2,108	
3,968	QST Subscriptions	5,829	
1,087	"73" Subscriptions	797	
1,491	RSGB Subscriptions	1,675	
28,527			32,762
	Less		
4,417	Opening Stock Publications	3,481	
	Purchases		
605	NZART Publications	7,292	
5,786	ARRL Publications	6,058	
599	CQ Publications & Subscriptions	400	
4,622	RSGB Publications	3,388	
1,237	Radio Publications	1,052	
472	WIA Subscriptions	665	
884	AMSAT Subscriptions	913	
1,620	Ham Radio Subscriptions	1,694	
4,007	QST Subscriptions	5,128	
793	"73" Subscriptions	687	
1,510	RSGB Subscriptions	1,532	
26,552		32,290	
	Less Closing Stock		
688	NZART Publications 4,454		
583	ARRL Publications 759		
1,625	RSGB Publications 984		
585	Radio Publications 722		
3,481		6,919	
23,071	Cost of Sales	25,371	
1,149	Managers Honorarium	1,603	
860	Postage & Stationery	977	
25,080			27,951
$3,447	**Net Profit on Publications**		$4,811

'Break-in' Revenue Account

For The Year Ended 31st December, 1981

1980 $		1981 $	1981 $
	Expenses		
1,837	Addressograph & Computer	2,244	
2,925	Editorial Fees	3,510	
5,646	Postage	7,771	
40,430	Printing Costs	60,610	
3,019	Printing Blocks	4,116	
35	Stationery	591	
231	Sundry Expenses	677	
54,123			79,519
422	Wrappers on Hand at Start of Year	1,070	
1,412	Wrappers Purchased	0	
1,834		1,070	
1,070	Wrappers on Hand at Year End	750	
764			320
54,887			79,839
	Less Recoveries		
14,344	Advertising Receipts	15,662	
2,318	Call Book & Break-in Sales	3,050	
16,662			18,712
38,225	**Net Cost of Break-in Transferred Forward**		$61,127

MORSE TAPES

Price $3.50 per C60 cassettes to NZART members. A list of tapes is in the Callbook, or send stamped addressed envelope to:

NZART RADIO TRAINING SCHEME
P.O. Box 675,
New Plymouth.

Members please, Break-in wrapper or similar proof of membership.

A.R.E.C. Imprest Account

For The Year Ended 31st December, 1981

1980 $		$	1981 $
2,241	Balance from Previous Year		3,126
270	Interest Received—Contingency Reserve		270
138	Interest Received—Bank Account		148
4,000	Grant from Government—This Year		4,750
0	Donations		6
6,649			8,300
	Less AREC Expenses		
501	Administration	355	
349	Depreciation	454	
250	Development Grant	0	
839	Duplicating & Stationery	423	
645	Insurance	540	
361	Maintenance of Equipment	598	
578	Subsidies	4,150	
3,523			6,520
3,126	**Balance to Carry Forward**		$1,780

Income & Expenditure Account

For The Year Ended 31st December, 1981

1980 $		$	1981 $
56,839	Subscriptions Received	66,234	
3,447	Net Profit on Publications	4,811	
536	Donations Received	172	
5,642	Interest Received	6,038	
893	QSL Bureau Profit for Year	507	
25	Raffle Proceeds	0	
100	Region III Friendship Fund Donations	0	
1,131	Sales of RTS Tapes, etc.	1,170	
764	Stock on Hand—Office Stationery	1,184	
0	Surplus Ex Conventions		
	Westland 1980	1,000	
	Auckland 1981	2,518	
0	Contests & Awards Income	400	
69,377	**Gross Income**		84,034
	Less Expenses		
38,225	Net Cost of "Break-in"	61,127	
644	Opening Stock on Hand Stationery	764	
38,869		61,891	
1,837	Addressograph & Computer	2,245	
250	Allowance—QSL Manager	250	
250	—Contest Manager	250	
250	—Comms. Manager	250	
350	Audit Fee	410	
0	Ballot Expenses	1,221	
164	Contests & Awards	471	
180	Convention—Administration	474	
2,404	—Travelling Exps.	2,715	
126	Depreciation on Equipment	124	
1,019	Donation to "AMSAT"	0	
211	General Expenses	204	
566	IARU Region III Contributions	857	
140	Insurance	145	
421	Membership Drive Expenses—ZL1 and ZL4	48	
600	Office Rent & Costs	600	
1,605	Postage & Tolls	1,868	
1,549	Printing & Stationery	2,100	
850	Radio Training Scheme Exps.	1,177	
0	Tower Costs	120	
241	Travelling Expenses—Local	1,010	
9,290	Secretary's & Treasurer's Remuneration	11,603	
599	FMWG Expenses	1,919	
26	WARC Costs	0	
61,770	**Total Expenses**		91,952
$7,607	**Surplus of Expenditure over Income**		—$7,918

Balance Sheet

As At The Year Ended 31st December, 1981

1980 $		$	1981 $
	Accumulated Funds & Reserves		
35,218	Opening Balance		42,825
7,607	**Less:** Surplus of Expenditure over Income		7,918
42,825	**Balance at Year End**		34,907
	Reserves		
2,000	Contingency Reserve		2,000
44,825	**Total Funds**		$36,907
	Represented by Net Assets		
	Current Assets		
8,243	Cash in Accounts & in Transit	5,347	
21,887	Bank of N.Z.—Accounts	15,216	
48,208	Bank of N.Z.—Term Deposits	55,375	
575	Post Office Savings Bank	592	
0	AREC Grant Expected	4,750	
1,251	Trade Debtors	1,792	
2,711	'Break-in' Debtors	2,155	
6,560	Stock on Hand	8,854	
89,435			94,081
	Less Current Liabilities		
9,695	Sundry Creditors	11,915	
44,610	Subscriptions in Advance	56,757	
3,216	AREC Balance Held	1,780	
57,431			70,452
32,004	**Available Working Capital**		23,629
3,821	**Fixed Assets as per Schedule**		4,278
	Investments		
	Wellington Hospital Board		
2,000	Due 1-8-82 6¼%	2,000	
	Christchurch City Council		
5,000	Due 1-8-85 13½%	5,000	
	Representing 'Contingency		
2,000	Reserve' Due 1-8-85	2,000	
9,000			9,000
44,825	**Net Assets**		$36,907

NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS (INC.)
STATEMENT OF ACCOUNTING POLICIES

YEAR ENDED 31st DECEMBER, 1981

(a) General accounting principles recognised as appropriate for the measurement and reporting of results and financial position under the historical method have been used in the preparation of these Accounts.

(b) Depreciation on Fixed Assets has been charged using the straight-line method based on the remaining economic life for all items estimated as:

Intruder Watch Gear	4 years
Transceivers — AREC	8 years
Tape Recorder — RTS	2 years
Cabinet — VHF Comm.	8 years
Transceivers ($\frac{1}{2}$ with AREC)	9 years

(c) Stock on Hand has been valued by the Treasurer and General Secretary at the lower of cost or net realisable value on a FIFO basis after due allowance for damaged and obsolete stock.

(d) No liability for taxation has been accrued in these Accounts.

(e) These policies are unchanged as compared with the previous year.

AUDITOR'S REPORT TO THE MEMBERS OF THE NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS (INC.)

We have examined the books and records of the New Zealand Association of Radio Transmitters (Inc.) for the year ended 31st December, 1981, and have obtained all the information and explanations we have required. We have accepted and relied on the Certificate of the General Secretary as to Stocks on Hand as at 31st December, 1981. We have not audited the Conference Account or the AREC Imprest Account, the former being audited by a Council Appointee and the latter by the Treasurer to the 31st March of each year.

Subject to the foregoing, in our opinion, the Balance Sheet and attached accounts present a true and fair view of the Association's affairs at 31st December, 1981, and the results of the activities for the year ended at that date.

GILFILLAN MORRIS & CO.
Chartered Accountants
Christchurch

26th March, 1982.

REMITS

REMIT 1 Gisborne Branch 11. Non-Transmitting.

Constitution:

1. Clause 37. That the words "Amateur Radio Emergency Corps" be changed to "Amateur Radio Emergency Service".

2. That Council investigate a change of name for AREC.

REMIT 2 Franklin Branch 10. Transmitting.

NZART Council are requested to approach the NZPO and ask that the frequency allocation for novice operators be extended to include a designated 50kHz segment of the 144MHz band for CW and MCW operation.

Explanation

The introduction of a Grade 3 licence was very popular. The novice grade was not quite so successful. This remit attempts to make the novice licence more attractive and at the same time encourage the Grade 3 operator to become a novice. novice.

If passed the following would take place:

(a) Novices would have an increased number of stations to contact.

(b) DX would be encouraged, as an "active" CW segment would be created.

(c) Grade 3 operators would be encouraged to become novices in order to use CW on the 144MHz band.

(d) Grade 3 operators who hold a novice call

could use their existing VHF equipment on CW or MCW at no extra cost.

(e) Novices who become Grade 3 operators could use their present gear on VHF phone at no extra cost.

(f) The two groups who need the CW practice would have a common band to help each other.

REMIT 3 Tauranga Branch 39. Transmitting.

That the NZART approach the IARU suggesting that the maximum power input to the final amplifier of amateur transmitters, operating at or below 30MHz, be limited to 400 watts, or less if prescribed by the various national controlling authorities.

Explanation

The number of Amateur radio operators continues to increase and with limited spectrum space QRM is on the increase. A reduction in power output should result in less QRM on the bands, especially the 20 metre band. It might also encourage better antenna designs.

At present approximately 41 of the 110 countries listed in the Call Book have power limitations of, or in excess of 1000 watts and it is felt that this disadvantages the rest of amateur fraternity.

REMIT 4 Tauranga Branch 39. Transmitting.

That the NZART approach the NZPO to amend the rules governing the amateur exams so that a credit is allowed for each subject passed.

Explanation

The Amateur Radio exams seems to be the only public examinations where one can pass a subject and have to sit it again because of a fail in another. Although taken at the same time, each paper is separate in content, is marked separately and the results are shown separately.

REMIT 5 Hibiscus Coast Branch 80. Transmitting.

That Council approach the NZPO requesting re-consideration to be given to the policy of non-transportability of a pass in Radio Regulations from the Novice licence examination to higher graded examinations where the required standard to be met for a pass is common to the said licence exaxminations.

Explanation

Recently a Novice licence holder sat the Grade II licence examination and passed in the required section excepting Radio Regulations. He failed this section by only a few marks. The candidate in question had studied diligently and was considered to be a valuable addition to amateur ranks. Irrespective of the personal considerations concerned with this particular case the fact that has been shown clearly is that once a section such as Radio Regulations, of same standard and common to each grade, has been passed it should not be necessary for a candidate to be re-examined. It is recognised that the Novice licence has been introduced to give the prospective amateur the chance to gain experience on air, however the very fact of its non-transportability and being terminating can lead to frustration of diligent studiers when it is found that due to a sudden unexpected change of examination format, as occurred in the September examination, the candidate suffers loss of all gain by a failed mark in a section already gained. Additionally it should be noted that a Novice is practising Radio Regulations while operating as a Novice.

REMIT 6 Branch 60 Taupo. Transmitting.

That the 70cm SSB call frequencies be changed from 432.2MHz to 432.19MHz.

Explanation

Some models of Belcom transceivers are unsuited to 432.2MHz and 432.19MHz is commonly used as a calling frequency.

The Mailman Cometh

The Editor,
"Break-in"
Dear Sir,

I would like to use your column to thank all the radio hams who travelled long distances and spent many hours getting to the Waihi Club Junk Sale last November. The Waihi Club appreciates the support of all hams and also we like to hear comments after the event to enable us to continue to stream-line the business of the day to suit most people. I would like to point out to everyone that it is the amount of gear brought in for sale by visiting hams that is making the day so big and the auction so long and we apologise for the long wait some of you had before your lots came up for auction.

We are looking at other methods of accepting lots for auction and we will circulate all clubs on any changes that are to be made for this year's Junk Sale — the date of which has already been booked for Saturday 13th November 1982.—Jean C. Bott, President, Waihi & District A.R.C.

The Editor,
"Break-in"
Dear Sir,

CALLING FREQUENCIES

By "Gentleman's Agreement" certain parts of the amateur bands are set aside as "Calling Frequencies". (See pages 77 and 96 1981 NZART Callbook for details).

The HF bands have DX propagation every day, and at times are extremely busy. The deliberate operation of N.Z. stations on HF call channels is low, but accidental operation is quite high. This is due mainly to the busy conditions and many operators not knowing what the call channels are.

On VHF/UHF, however, the situation is reversed. A crowded band is unknown even on Field Day, accidental use of the call channel is very low, but rag chewing on it is very high. Those who use the frequencies for other than their designated purpose are not operating illegally. They are not intentionally stopping it being used as a call frequency. They are, however, due to a lack of thought, depriving others of a system which was adopted under a "Gentleman's Agreement".

Take the following example and ask, "could this be me?"

Operators 1 and 2 meet on the repeater and decide to QSY to "say" 144.20MHz. As both stations are local to each other, S9 signals arrive at each end.

Operator 1 remarks, "If we use this call channel the DX down country might hear us and join in."

Operator 2 adds, "That is a good idea", but does not leave a pause between overs, and now rambles on for 10 minutes.

A DX station who did happen to hear them could not get into the QSO, could not override the other stations' S9 signal and by the time the over was finished the band had folded anyway. The DX operator closed down in disgust. Operator 3 in the meantime who is within easy range of 1 and 2 does not want to interfere with the existing QSO, waits patiently for the channel to clear. The intention is to call CQ DX but after sometime gives up and also switches "off". Operator 1 after about ½ an hour remarks, "Don't hear much DX tonight".

The example quoted is "fact", it happens regularly on FM or SSB, on both the 2 metre and 70 cm bands. The intention of those concerned is good, they hope to promote VHF/UHF DX. The blocking of the call channels is not deliberate, it is just lack of thought. The concern is that the misuse of the VHF/UHF call frequencies is killing the very thing it was intended to promote, a place to listen, a place to call, a place to find people, but NOT a place to rag chew.

The agreement was made by "Gentlemen"; can we ask that it also be honoured by "Gentlemen".

Please establish contact on the CALLING FREQUENCY and remember repeaters are also call channels, then QSY to a clear spot and leave it free for others. Let us use the other parts of the 2 metre and 70 cm bands.

Thank you gentlemen, your co-operation is appreciated. On behalf of Franklin Amateur Radio Club, Branch 10 NZART. — R. Holt ZL1BBZ, Secretary.

Say !

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TH 3 Mk3	—	$485	8.0dB gain. 3 elements
TH 3 JNR	—	$385	8.0dB gain. 3 elements
BN 86 BALUN	—	$55	

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	14 AVQ	—	$210	22 feet. 40,20,15,10 metres.
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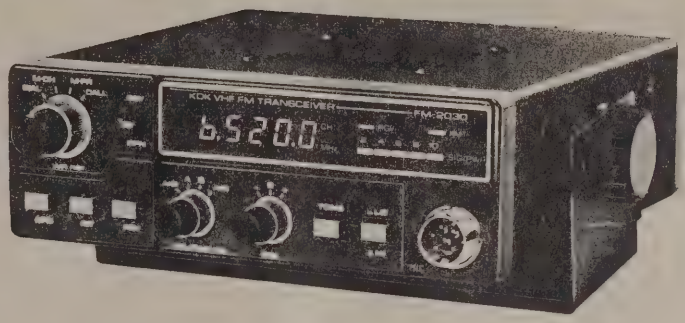

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VICOM INTERNATIONAL in association with KDK of JAPAN is proud to announce the release of the most sophisticated 2 metre FM Mobile Transceiver this decade. The FM 2030 is the result of matching up objectives of obtaining maximum operating features while retaining ease of operation; all in a small front panel and overall package size. The KDK design team achieved this by calling on their many years of experience in designing compact, VHF, mobile transceivers. The maximum use of multi-functional controls with coaxial knobs and in-house development of software for a third generation C-MOS micro-processor has resulted in this latest product with a revolutionary new control system.

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The VHF Scene

by IAIN MORRISON ZL1TF

CONTEST CALENDAR 1982

May 2nd

All VHF/UHF and microwave bands.

Saturday 1100-1600, 1700-2200 NZST, 10 x 1 hour periods. No field day bonus points.

July 31st

2 metre only contest.

Saturday 1800-2200 NZST. 4 x 1 hour periods. Stations FM only or QRP VHF. No field day bonus points.

November 6th

6 metre only contest.

Saturday 0900-1200 NZST. 1300-1400 NZST. 4 x 1 hour periods. Sections VHF or QRP VHF. No field day stations bonus points.

December 4/5th FIELD DAY

All bands.

Saturday 1700-2300 hours. Sunday 0700-1300 hours NZST. 12 x 1 hour periods. All sections, all bands. All bonus points apply.

FIVE VHF RECORDS BROKEN

ZL1BJB and ZL1THG located at Cape Reinga, at the tip of the North Island for DX Weekend worked ZL2ARW and team John ZL2TRV and John ZL2LZ to claim 4 new VHF records over the DX weekend period 30/31st January.

The Northern team had driven to Kaitaia and stayed with ZL1HS. They arrived at the Cape about 3 p.m. on the Saturday with ZL1BG, the Far North Road Team to take part in the contest. Their site was the Te Paki Trig station.

The southern team located at Mount Burnett, Farewell Spit had their gear set up on all bands and worked the Far North team as soon as they had their gear set up on 2 metres. Signals were very strong and were soon working on all bands. Careful alignment on 1296MHz brought good signals and ZL1BJB heard ZL2ARW one way on 2300MHz. On the same evening ZL1BG worked ZL2BW on 70cm to extend the existing record, then on Sunday afternoon ZL1BJB worked ZL2BMA further extending the record. Peter ZL2ARW and team then drove south to Westport then to Knights Point and on Monday evening at 1849 hours contact was made with ZL1BJB on 2 metres running only 10 watts with 5 x 5 signals both ways, contact was also made on 70 cm with similar results, an attempt was made on 1296MHz but no contact resulted.

The distances were at this stage 1050 km.

The weather conditions on DX Weekend were excellent for long distance DX and whilst not a great number of stations took part the distances achieved were great. After ZL2ARW and team left Knights Point they drove to Christchurch to try to work ZL2TWS located on Mount Ruapehu, central North Island on ATV.

They were not able to do this but were able to work Doug ZL2TAR on ATV.

A further record was broken for ZL2TWS when they were able to work Steve ZL2ASF in Motueka on ATV from Mount Ruapehu, the distance was 383 km.

Records Claimed

144MHz	ZL2ARW to ZL1BJB	1050 km
432MHz	ZL2ARW to ZL1BJB	1050 km
1296 MHz	ZL2ARW to ZL1THG	675 km
2304MHz	ZL2ARW to ZL1THG	675 km
ATV 440MHz	ZL2TWS to ZL2ASF	383 km

N.Z. VHF, UHF, SHF CONTEST RESULTS DECEMBER 5, 6, 1981

Section (a) FM 2M ONLY

1. ZL3TX (74)

Section (b) QRP—VHF

1. ZL3TX (74)
2. ZL3RX (61)

Section (c) SHF

1. ZL3HB (5406)
2. ZL3NW (2856)
3. ZL2BLI (2337)
4. ZL2TXH (1838)
5. ZL1BJB (1780)
6. ZL3AF (312)

Section (d) VHF

1. ZL3HB (4078)
2. ZL2VH (3335)
3. ZL2BLI (2869)
4. ZL1BJB (1932)
5. ZL2TIM (1901)
6. ZL4AS (1836)
7. ZL1BFQ (1057)
8. ZL3AF (916)
9. ZL2VI (869)
10. ZL4AI (777)
11. ZL2TZW (757)
12. =ZL4DO (696)
    ZL1UDS (696)
13. ZL4TFJ (661)
14. ZL2AQR (562)
15. ZL2AUB (267)

Section (e) ATV

1. ZL2BLI (3055)
2. ZL2TWM (1613)
3. ZL3HB (248)

RESULTS N.Z. VHF, UHF, SHF CONTEST BY BANDS

6 METRES

1. ZL3HB (1226)
2. ZL2VH (969)
3. ZL2BLI (766)
4. ZL2AQR (562)
5. ZL4AS (547)
6. ZL1BFQ(173)

2 METRES QRP

1. ZL3TX (74)
2. ZL3RX (61)

2 METRES

1. ZL2VH (1762)
2. ZL3HB (1684)
3. ZL2BLI (1423)
4. ZL3AF (916)
5. ZL2VI (869)
6. ZL4AI (777)
7. ZL1BFQ (753)
8. ZL1UDC (696)
9. ZL4AS 690)
10. ZL4TFJ (661)
11. ZL1BJB (352)
12. ZL4DO (332)
13. ZL2AUB (267)
14. ZL2TZW (217)

70cm

1. ZL2TIM (1901)
2. ZL1BJB (1580)
3. ZL3HB (1168)
4. ZL2BLI (680)
5. ZL2VH (604)
6. ZL4AS (599)
7. ZL2TZW (540)
8. ZL4DO (364)
9. ZL4AS (690)

70cm ATV

1. ZL2BLI (3055)
2. ZL2TWM (1613)
2. ZL3HB (248)

SHF SECTION

1296 (23cm)

1. ZL3HB (3813)
2. ZL1BJB (1780)
3. ZL3NW (1428)
4. ZL2BLI (1134)

5.8GHz

1. ZL3HB (1499)
2. ZL3NW (1428)

10GHz

1. ZL2TXH (1838)
2. ZL2BLI (1203)
3. ZL3AF (312)
4. ZL3HB (94)

HIGHEST AGGREGATE POINTS

1. ZL3HB (9733)
2. ZL2BLI (8261)
3. ZL1BJB (3712)

Check logs from ZL2TMD , ZL2AYO, ZL2BLN, ZL2TYB and ZL1APA.

From the comments many stations felt that both band conditions and a lack of stations were the feature of the contest.
The number of logs received was about average for this contest. It may be possible that more contacts would be made if mention was made of station sites in VHF scene in "Break-in" or via the various VHF group newsletters before December.

There are some particularly notable band scores, such as ZL2TIM (1901) on 70cm, ZL2BLI (3055) ATV, ZL3HB (3813) on 23cm and ZL2TXH (1838) on 3cm.

From the summary data most stations were using 80W plus on 6m, 2m, and 70cm, nearly all the linears were commercial.

All of the homebrew equipment was in the SHF section with one commercial line up at 1296MHz and two commercial gunnplexers on 10GHz.

Individual band scores and section scores will be posted to those who requested them, a copy of the band scores will also be available at the Auckland VHF club rooms.

Laurie, ZL1TTY,
Contest Manager.

1296MHz Trans Tasman Record
ZL1AVZ to VK2BDN 2131km

On 9/2/82 at 9 a.m. the first known contact on 1296MHz Trans Tasman resulted between Brian ZL1AVZ and VK2BDN, Brian was located at Murawai, West Auckland and VK2BDN in Sydney.

After 2 days of very good conditions across the pond on 2 metres and 70cm prior to this contact, Brian had been taking careful note of radio conditions. Little or no openings on 6 metres occurred during this time.

On the morning of the 9th February, Brian ZL1AVZ worked Dick on 70cm and asked if Dick VK2BDN would leave his carrier running on 1296MHz while he had breakfast, on careful alignment on Brian's dish, the signal came out of the noise to much jubilation, it was difficult to raise Dick Norman as he was still eating so Brian had to sweat it out until breakfast was over. A two way contact resulted with VK2BDN sending SSB, a report of 5 x 5 resulted. Brian ran CW with a 3 x 2 x 9 report to Sydney.

Unfortunately this contact is not as long as one achieved by two VK stations last year when VK6KZ/P worked VK5MC at a distance of 2290 km, Brian and Dick's 1296 contact being just 160 km short. No doubt they will be all out to extend this contact in the near future. This VK contact of 2290 km constitutes a world record.

Brian ZL1AVZ also has worked ZL2BFC on 10/1/82 on 1296MHz, which must also be a new contact between Auckland and Wellington on this band.

144/432MHz Trans Tasman

On 8/2/82 ZL2TAL, ZL2TVT, ZL2TGZ and ZL1AVZ and others worked VK2ZRU, VK2KBN and VK2BDN on 432MHz and 144 MHz, unfortunately no further info is available as to time etc. On 23/1/82 VK2JJ was working many ZL stations, via the Waikato 2 metre repeater at 2050 hours, then on on the same evening ZL1AXX, Bob, worked 10 stations, all VK2, on 144.1MHz. The strongest station that Bob worked as VK2ZAB who was using 400 watts PEP to an array of 4 x 11 element yagis at 80 feet. A contact between ZL1BJB and VK5RO was made in January on 144.1MHz SSB.

On 9/2/82 when the band was open to VK, a number of hams from Wellington (ZL2TAX, ZL2TRV, ZL2ARW and ZL2AQE) went up on the Paekakariki hill. However, they were only able to work one VK, namely VK2DDG.

6 Metres

Bill ZL2CD reports the openings to VK and the Pacific Islands continued as normal during the months of sporadic "E" activity continues. Lack of activity in some areas appeared to be the main reason that not too many stations were worked.

Openings to VK were noted in January on 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 24, 25, 26, 26, 30, 31. Comprising VK2, 3, 4, 5, 7 and 8 have all been worked during January.

JAs were worked on January 11 from 1845 till 2100, while VK8GB, Darwin was both a strong and consistent signal all evening. Back-scatter from many ZL stations included ZL1BHX, 3NE, 3RW, 2AQR was noticeable that evening and on several other occasions.

On Jan 20th from 1115 till 1230, ZL3ADT, 3NE, 3TIC were all worked with the beam on VK7, but no VKs were heard.

The latest DX that was worked was on Feb 4th when H44PT was in for several hours and worked by all ZL districts and many VKs.

Finally a plea for more activity on 6 from all operators, T calls or otherwise. TVI isn't such a problem as some imagine. A good filter works wonders!

Thanks for the letter Bill.

Further 6 metre contacts were on 1st Feb when many JAs were worked by ZL1 district. On 2nd Feb VS6BE beacon has been heard running high speed morse on 51.110MHz by ZL1ADP and ZL2KT for long periods. On 20 Jan, H44PT has been worked by ZL1MQ, 2AQR, 1TF.

The first W/K opening occurred for 82 on 2 Feb and also on the 11th Feb when ZL1MQ and ZL2KT worked mainly W4 and W5 states. On 23 Jan ZL2KT worked 3D2CM Fiji Islands at 0300.

A good record by a keen 6 metre operator must surely be JA4MBN when on 22/3/81 he worked VP2VGR, W2HOY/KP4, WD4IYS, BW4OSN and FM7AD, all in one day's operating.

I personally find 6 metres the most interesting band to work in the VHF spectrum and would recommend it to anyone that is contemplating building or purchasing equipment. Most current activity is on SSB centred about 52.050MHz, but some use is being made of FM mode about 52.525MHz in some areas.

ZL4 Activity

Notes have been received from Graham ZL4JB on activity over the Christmas period. There has been several visitors operating on VHF ZLØAEL and ZL2TAX/MM, also Paul Roger G4BEN who was taking part in the round the world yacht race.

Graham hopes soon for contact on 2 metres with Campbell Island, now that there are 2 hams resident there, both being keen VHF types. ZL4OY and ZL3AFH are also active on OSCAR.

The recent release of 6 metres to T calls has produced a lot of interest. Stations active on 6 metres are ZL4CN, 4MB, 4LV, 4LT, 4KB, 4HR, 4LH, 4THO, 4TGT and 4TBN has a home brew transverter under way. Some will be active on FM only (the calling frequency being 52.525 MHz).

Graham reports that 6 was open to VK7 land on January 20th and other days, he runs a transverter running 2 watts and hopes soon to build a beam to replace his ground plane.

A letter from Keith ZL4AI says that ZL4IS has been working Kaikoura on 432MHz and Christchurch on 1296MHz. ZL4QC was working many ZL2s during the field day contest.

A local group which includes ZL4DO Bob and ZL1BTB Mike are building a linear repeater to be positioned on the Otago peninsula, few km east of the Dunedin city centre.

Snippets

Some snippets from ZL1HV reports of G3VFY in Basildon, Essex, working 4X4IX in Tel Aviv on 144MHz SSB, a distance of 3544 km.

G8PWX in Tynemouth made the first two way on 432MHz RTTY with Norway when he worked LA3EQ over a 660 km path. Whilst PAØSSB made the first 2300MHz contact via moonbounce, to W6YFK.

The Far North Radio Club are very keen on VHF Contests and make a plea to beam North during contests as they could be rewarded with some long distance contacts.

The keen types are Tony ZL1BHX, Carol ZL1HS and OM, Mike and Basil who I don't have callsigns for. They are equipped on 2m and 70cm from Kaitaia.

That's it for this month, please send information to me via Call Book address for publication. All letters welcome.

73s and good DX.

ZL1TF

ORBITAL PREDICTIONS

		OSCAR 8			UO-9			RS-3			RS-4		
	DATE	ORBIT	TIME	LONG	ORBIT	TIME	LONG	ORBIT	TIME	LONG	ORBIT	TIME	LONG
21	APR 82	21031	01:34	92.5	2973	01:24	161.2	1227	01:19	70.1	1218	01:27	286.5
22	APR 82	21045	01:38	93.6	2988	01:09	158.1	1239	01:01	67.7	1230	01:19	285.3
23	APR 82	21059	01:43	94.8	3003	00:53	154.9	1251	00:44	65.3	1242	01:12	284.1
24	APR 82	21072	00:04	70.1	3018	00:38	151.7	1263	00:26	62.9	1254	01:05	282.9
25	APR 82	21086	00:09	71.3	3033	00:22	148.5	1275	00:08	60.5	1266	00:58	281.7
26	APR 82	21100	00:13	72.4	3048	00:06	145.3	1288	01:49	87.9	1278	00:50	280.5
27	APR 82	21114	00:18	73.6	3064	01:26	165.9	1300	01:32	85.5	1290	00:43	279.3
28	APR 82	21128	00:22	74.8	3079	01:10	162.7	1312	01:14	83.1	1302	00:36	278.1
29	APR 82	21142	00:27	75.9	3094	00:54	159.5	1324	00:56	80.7	1314	00:29	276.9
30	APR 82	21156	00:32	77.1	3109	00:39	156.3	1336	00:38	78.3	1326	00:21	275.7
1	MAY 82	21170	00:36	78.2	3124	00:23	153.0	1348	00:21	75.9	1338	00:14	274.5
2	MAY 82	21184	00:41	79.4	3139	00:07	149.8	1360	00:03	73.5	1350	00:07	273.3
3	MAY 82	21198	00:45	80.5	3155	01:26	170.4	1373	01:44	100.9	1363	01:59	302.0
4	MAY 82	21212	00:50	81.7	3170	01:10	167.2	1385	01:26	98.5	1375	01:52	300.8
5	MAY 82	21226	00:54	82.8	3185	00:54	163.9	1397	01:08	96.1	1387	01:45	299.6
6	MAY 82	21240	00:59	84.0	3200	00:38	160.7	1409	00:51	93.7	1399	01:37	298.4
7	MAY 82	21254	01:04	85.1	3215	00:22	157.4	1421	00:33	91.3	1411	01:30	297.2
8	MAY 82	21268	01:08	86.3	3230	00:06	154.2	1433	00:15	88.9	1423	01:23	296.0
9	MAY 82	21282	01:13	87.4	3246	01:25	174.7	1446	01:56	116.3	1435	01:16	294.8
10	MAY 82	21296	01:17	88.6	3261	01:09	171.5	1458	01:38	113.9	1447	01:08	293.6
11	MAY 82	21310	01:22	89.7	3276	00:53	168.2	1470	01:21	111.5	1459	01:01	292.4
12	MAY 82	21324	01:26	90.9	3291	00:36	164.9	1482	01:03	109.1	1471	00:54	291.2
13	MAY 82	21338	01:31	92.0	3306	00:20	161.7	1494	00:45	106.7	1483	00:47	290.0
14	MAY 82	21352	01:35	93.2	3321	00:04	158.4	1506	00:28	104.3	1495	00:40	288.8
15	MAY 82	21366	01:40	94.3	3337	01:23	178.9	1518	00:10	101.9	1507	00:32	287.6
16	MAY 82	21379	00:01	69.7	3352	01:06	175.6	1531	01:51	129.3	1519	00:25	286.4
17	MAY 82	21393	00:06	70.8	3367	00:50	172.3	1543	01:33	126.9	1531	00:18	285.2
18	MAY 82	21407	00:11	72.0	3382	00:34	169.0	1555	01:15	124.5	1543	00:11	284.0
19	MAY 82	21421	00:15	73.1	3397	00:17	165.7	1567	00:58	122.1	1555	00:03	282.8
20	MAY 82	21435	00:20	74.3	3412	00:01	162.4	1579	00:40	119.7	1568	01:55	311.5

		RS-5			RS-6			RS-7			RS-8		
	DATE	ORBIT	TIME	LONG	ORBIT	TIME	LONG	ORBIT	TIME	LONG	ORBIT	TIME	LONG
21	APR 82	1217	01:25	23.9	1225	00:18	7.3	1220	00:24	356.6	1214	00:43	9.6
22	APR 82	1229	01:20	24.2	1237	00:02	5.0	1232	00:14	355.6	1226	00:40	10.4
23	APR 82	1241	01:15	24.4	1250	01:46	32.5	1244	00:05	354.7	1238	00:37	11.3
24	APR 82	1253	01:09	24.7	1262	01:30	30.2	1257	01:54	23.6	1250	00:34	12.1
25	APR 82	1265	01:04	24.9	1274	01:15	27.9	1269	01:45	22.7	1262	00:32	12.9
26	APR 82	1277	00:59	25.1	1286	00:59	25.7	1281	01:35	21.7	1274	00:29	13.8
27	APR 82	1289	00:53	25.4	1298	00:44	23.4	1293	01:25	20.8	1286	00:26	14.6
28	APR 82	1301	00:48	25.6	1310	00:29	21.1	1305	01:16	19.8	1298	00:23	15.5
29	APR 82	1313	00:43	25.9	1322	00:13	18.8	1317	01:06	18.8	1310	00:20	16.3
30	APR 82	1325	00:37	26.1	1335	01:57	46.4	1329	00:56	17.9	1322	00:18	17.1
1	MAY 82	1337	00:32	26.3	1347	01:41	44.1	1341	00:47	16.9	1334	00:15	18.0
2	MAY 82	1349	00:27	26.6	1359	01:26	41.8	1353	00:37	16.0	1346	00:12	18.8
3	MAY 82	1361	00:21	26.8	1371	01:10	39.5	1365	00:28	15.0	1358	00:09	19.7
4	MAY 82	1373	00:16	27.1	1383	00:55	37.2	1377	00:18	14.0	1370	00:06	20.5
5	MAY 82	1385	00:11	27.3	1395	00:40	35.0	1389	00:08	13.1	1382	00:04	21.3
6	MAY 82	1397	00:05	27.5	1407	00:24	32.7	1402	01:58	42.0	1394	00:01	22.2
7	MAY 82	1410	01:60	57.8	1419	00:09	30.4	1414	01:48	41.1	1407	01:58	53.1
8	MAY 82	1422	01:54	58.0	1432	01:52	57.9	1426	01:38	40.1	1419	01:55	53.9
9	MAY 82	1434	01:49	58.3	1444	01:37	55.6	1438	01:29	39.2	1431	01:52	54.8
10	MAY 82	1446	01:44	58.5	1456	01:21	53.4	1450	01:19	38.2	1443	01:49	55.6
11	MAY 82	1458	01:38	58.8	1468	01:06	51.1	1462	01:10	37.2	1455	01:47	56.5
12	MAY 82	1470	01:33	59.0	1480	00:51	48.8	1474	00:60	36.3	1467	01:44	57.3
13	MAY 82	1482	01:28	59.2	1492	00:35	46.5	1486	00:50	35.3	1479	01:41	58.1
14	MAY 82	1494	01:22	59.5	1504	00:20	44.2	1498	00:41	34.4	1491	01:38	59.0
15	MAY 82	1506	01:17	59.7	1516	00:04	42.0	1510	00:31	33.4	1503	01:35	59.8
16	MAY 82	1518	01:11	60.0	1529	01:48	69.5	1522	00:21	32.4	1515	01:32	60.7
17	MAY 82	1530	01:06	60.2	1541	01:32	67.2	1534	00:12	31.5	1527	01:30	61.5
18	MAY 82	1542	01:01	60.4	1553	01:17	64.9	1546	00:02	30.5	1539	01:27	62.3
19	MAY 82	1554	00:55	60.7	1565	01:02	62.7	1559	01:52	59.5	1551	01:24	63.2
20	MAY 82	1566	00:50	60.9	1577	00:46	60.4	1571	01:42	58.5	1563	01:21	64.0

Due to the low orbit of Uo-9 accurate predictions are difficult to make.

The above data lists daily equator crossings which should be used in conjunction with the satellite tracking information listed in Callbook (p. 82) or with a Galbraith Projects "Aiming Chart".

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Overseas Liaison Officers **ARTHUR GODFREY** ZL1HV
FRED JOHNSON ZL2AMJ
JAMIE PYE ZL2NN

Development of Amateur Radio Activities Authorised

CHINA

The following extract from the "Wuxidian" (monthly radio magazine published in Beijing, Peoples Republic of China) January 1982 issue, has been sent from Mr Shozo Hara, JA1AN, President of the Japan Amateur Radio League, via David Rankin 9V1RH/VK3QV, Secretary of the IARU Region 3 Association.

Cheng Ping
China Radio Sport Association

Thanks to the support given by all leading bodies concerned and through the active preparation made by departments involved, the Supreme Executive Council of China has officially approved the re-opening and development of the long awaited activities of Amateur Radio in China.

Amateur radio stations to be established shall be organised on club system basis with a leader in charge.

First station to open will be in Beijing where conditions are already met for operation then followed by other stations to be installed in provinces, regions and cities.

After operating for some time, all experiences accrued from these activities will be put together by gradual steps in order to facilitate the extension of the scope of activities as well as to perfect the system and method of management.

Possible sites envisaged for establishing Amateur Radio stations are various military physical education schools, universities, colleges, youth culture centres and science and technical institutions that will meet the objective requirements.

Persons participating in Amateur Radio activities should support the guiding principle of the Chinese Communist Party, devote themselves to the socialistic motherland and obey the national laws and governing regulations of radio communication. Also, they should cherish the idea of internationalism and humanism, have lofty character and respect culture and manners. In addition, they must actively pursue their work and endeavour to raise technical standards thus devoting to the progress of society and bringing peace to mankind.

Each of the club stations should file an application for opening of a radio station and acquire a license. For the time being, no permit will be issued to stations on an individual basis. Those wishing to be an Amateur must first receive training in this art, pass the examination and acquire certification for operation before participating in the activities of the designated club stations.

Use of frequencies, extent of communication and activities will be, in general, along the lines established in the international Amateur Radio regulations.

The development of Amateur Radio activities will not only be instrumental in training persons with talent in the radio telecommunications and electronic fields but also provide ground for study and experiments of scientific techniques to many of the Amateur Radio enthusiasts. Furthermore, it will be able to promote technical exchanges with ham enthusiasts both in China and foreign countries as well as to enhance the friendship between them.

In particular, the youth can greatly benefit from this development in that it will enlarge their mental vision, raise their desire of taking part in this activity. It will also enrich their scientific knowledge and greatly develop their talent in this field. It will go a long way in making an all-round development of intelligence, virtue, the body and, as a link of four modernisation programmes, train potential technical personnel in radio telecommunication technology.

Presently, the China Radio Sport Association is actively making preparation for this programme and it will not be too long before BY1PK will be on the air.

Amateur Radio Emergency Corps

with **JIM MEACHEN** ZL2BHF

The Annual AREC Field Day was held on April 4th. A full report on the traffic handing and participation statistics will appear in next month's AREC Column. Reports this month include recent activities in the Wellington region.

Wellington Area SAREX

The Annual SAREX was centred on Mt Holdsworth High Ridge Waiohine Gorge area of the Tararuas, and involved some 80 personnel total. The aim was to train in general search and rescue technique and use of helicopter support and to this end a plot was established involving a school party on route to Totara Flats from Holdsworth Lodge via High Ridge. This party had supposedly separated, one group subsequently having an accident and sending two out to raise the alarm. This plot enabled a wide spread of clues and missing and injured people to be placed so that all 12 teams made one significant find.

The plot was orchestrated by the umpire group who had personnel in the field with HF SSB equipment on Police frequencies. Their Base station, near FHQ, also monitored 5680kHz and used a field telephone to FHQ to inject messages from town and to take requests for manpower, transport, etc. The exercise group used TR105 equipment on 5680 and 3023kHz for comms. The Police Command Vehicle was used as FHQ with a Red Cross Disaster Relief Team alongside providing a high standard of cuisine. Teams were placed by Iroquois helicopter and the resultant rapid build-up of traffic kept FHQ operators very busy.

A number of problems were encountered.

1) **Poor signals from TR105's.** This was attributed to poor aerial erection. Verified by two of the AREC operators making a surprise visit by Iroquois to one team who were found to have only part of the aerial unrolled and that only one metre above the ground.

2) Fault in the Iroquois HF equipment causing inability to receive.

3) High acoustic noise level at FHQ and cramped operating space.

The correct erection of aerials is a point to emphasise in training. Teams appear to assume that if they can receive Base then the aerial is good enough. This problem is likely to be more common where unnecessarily high power is used at Base.

A tin box by the chopper pad at a busy road end is not my favourite FHQ. I usually recommend a hut in the field away from acoustic and RF noise sources but the final decision rests with the Controller, and AREC can but advise on the problems of any proposed site. Fortunately the 11kV line only 10 metres from FHQ aerials gave no RFI. Operators: Umpires Group, John ZL2AQE, Exercise Group, Steve ZL2SR, David Tapp and Terry ZL2AYY.

Report, Terry Waghorn, ZL2AYY.

The Bermuda Spa Pools Rally

SATURDAY 6 MARCH 1982

The rally was promoted by a consortium from the MG Car Club (Wellington Centre) Inc and the Victoria Car Club Inc. The event comprised eight special stages covering 108.8 km on farm and water-board roads in the Pauatahanui area north of Wellington. Radio communications was provided by sixteen AREC operators between a Base station located at Pauatahanui Hall, mobile officials, and the marshall groups out in the field. A variety of 2 metre transceivers were used on two of the local repeaters 700 and 710.

The operation commenced at 0700 and concluded at 1800 hours. An after rally function at the hall gave all concerned a chance to talk about the highlights of the day and partake of some well earned refreshments. I would like to thank the radio operators involved from the following NZART Branches: Wellington VHF Group, Hutt Valley, Upper Hutt and Titahi Bay.

Report, Bernard Wright, ZL2EYC/ZL2QZ.

Section Leaders Net

AREC Section Leaders are reminded of the Monthly Section Leaders Net held on the Third Monday of the Month at 7.30 p.m. on 3900kHz USB. All Section Leaders are encouraged to attend and to share in and learn from the experience of others in Search and Rescue and other AREC activities.

DX-ing

With **RON MURPHY** ZL1AMM

THE TINY AND NEWEST

DXCC Country — 1AØKM: Where in the world would you find a country like SMOM (the official abbreviation for Sovrano Internazionale Militare Ordine di Malta), which is over 930 years old, has a population of 80, an Air Force of 50 planes, and boasts as its biggest tourist attraction a keyhole?

The answer is: Downtown Rome, about a three minute stroll from the Spanish Steps, along the Via Condotti. The Tom Thumb nation measures in total area about the size of a football field.

SMOM issues its own passports and automobile licence plates, mints in own money in the form of gold and silver coins and prints postage stamps in the denomination of grano and tari.

A tourist crossing the border on to SMOM's soil is extraterritorially confronted with a medieval courtyard full of cars, many with the SMOM licence plate, red letters on white.

At the far end is a gargoyle dribbling water into a pool of goldfish, above which is a red-and-white Maltese cross. Embracing the yard is a four-story palace which houses the private apartments of SMOM bigshots, legations and a hospital.

Founded in the year 1048 before the First Crusade, SMOM has managed to hold on to its sovereignty.

At various times during its see-saw history, SMOM has been located on the islands of Rhodes, Malta, Cyprus and Sicily. Transferring to Rome in 1834, it settled at 68 Via Condotti.

Recognised by 39 countries, SMOM is engaged primarily in running hospitals, clinics and nursing schools in various parts of the world. It uses its armada of planes, which are flown by hired pilots from Italy, for evacuation and rescue work in times of war.

As part of its foreign hospital programme, SMOM administers three leper colonies in Africa, dozens of dispensaries in Western Europe, hospitals all over Italy and a crackerjack ambulance corps in four countries.

As for the SMOM keyhole, this is the delight of many a tourist. On top of Rome's historic Aventino Hill, SMOM owns a villa which is not open to visitors, but if you peek through the keyhole in the door of the high-walled garden, you can see the entire dome of St Peter's Basilica perfectly framed in the distance.

SMOM officials are inordinately proud of that keyhole, for it is the only one in the world through which you can view three countries at the same time — Italy, the State of Vatican City and SMOM.

What does all this mean? Work 1AØKM and you are working history. A study of the group, now mostly confined to humanitarian efforts, will show that in the past it was both tough and ready to fight, a trait often noted in some DXers. 1ØMGM is the QSL manager.

Acknowledgements — N.Z. Herald and CQ Magazine.

FOØ Clipperton Island: Ron Weaver, N6VO, has indicated by letter to the Editors of QRZ DX bulletin that he is in the preliminary stages of putting together an expedition to Clipperton in the latter part of 1982.

Ron has been in contact with members of the previous expedition, as well as ARRL and the French PTT. He has obtained a wealth of environmental reports from the Cousteau Society about the island and is currently trying to determine how to get there from the U.S.A. More to follow in the future.

VK9 Mellish Reef: Make a note in your DX diary for early May when VK2BJL Harry Mead, and associates should be visiting the reef again.

Cocos-Keeling and **Christmas Islands:** VK9Y and VK9X did eventuate by Steve VK3OT in February and March but using low power and mainly CW on Cocos-Keeling. The low power was a precaution to prevent any interference to local reception of Radio Australia and to not affecting local stereo record players. If you require a QSL card from Steve then please make sure that there are no callsigns or other radio jargon on the outside of the envelopes. The only address with certainty of delivery to Steve is: Stephen R. Gregory, Box 622, Hamilton, Victoria 3300, Australia. Companion operator was K1MM, Bill, whose QSL address is in a later paragraph.

China: The following is an extract from Geoff Watts RSGB DX News. The technical journal "Radio" of the Peoples' Postal Telegraph, publishers, of Peking says that Amateur Radio has now received official approval of the Chinese

government. Initial authorisation will be for Group stations in technical schools and universities. No private stations to be licensed at present but interested persons may apply now. (No address given—editor).

New Delhi Beacon: Commenced operation on 10 February on 28 295kHz using 10w to a vertical.

DJ9ZB QSL Managers' Directory: Subscriptions outside of Europe are $6 or 11 IRC's. A one-year subscription of 4 issues is $25 or 46 IRC's.

"Ham-Stamps", a newly formed international club with quarterly magazine, "Ham-Stamps" offers membership to all radio operators who are also stamp collectors. Annual subscription is $5. For further information send three IRC's to LA5NN, M. Bjerrang, P.O. Box 210, N-9401 Harstad, Norway.

South Georgia: VP8AEN Brian, is likely to be there for the remainder of 1982 but it is given mention that the meteorological station is to go automatic so if you need this one do not delay too long. This also applies to **Willis Island** with present operation by VK9ZH until possibly June of this year.

Tristan de Cunha: ZD9BV Andy, as reported in the last issue commenced operation in mid-February. Early in March he was appearing at 1800z on 21 338 or 28 620 if 15 metres had no conditions. Listen around the net frequencies for up-to-date information or contact QSL manager W4FRU. Please remember that Andy is a new ham and needs time to adjust.

Sierra Leone, 9L1: The 9L1 Field Day will be on 8 May for 24 hours commencing 0900z. Three locations will be used with calls 9L3FD, 9L4FD and 9L5FD. Frequencies used will include 14 310, 21 300 and 28 600kHz. On forty metres they will use 7 030 and 7 060kHz and listening up if the VFO is repaired in time. QSL to WAØCAE.

Trindade PYØ: A possible 25-day operation in April by PY1RR, Eddy with proposed callsign of PYØRR, PQØRR or ZYØRR.

Ivory Coast: TW2JJ should now be back in the U.S.A. Anyone still needing cards should QSL KNØKCW.

K1MM QSL: Globe-trotter Bill now has a new one as follows — K1MM, Bill Poelmitz, Box 73, Framingham, Ma 01701.

TN8AJ, The Congo: A second letter has been received from Jorg along with some QSL cards for his December operation. He advises that he will be back in the Congo from early March until end of April approximately and hopes to activate again his TN8JJ call. He will check in a few times, for the Pacific boys, to the ANZA net on 21 203kHz at 0500z. At the present time he is working as an engineer of radio equipment. His call, back in Berlin is Y42RO and he has yet to work a ZL despite his 1kW to a ground plane. Please if you hear him, give a call. Jorg does work CW and will also oblige you on his SSB frequency when requested. QSL manager is still Y25LO (ex DM2XLO). If any ZL failed to get a QSL card, after application, for the 1979-80 operation of Jorg as TNØHL and TN8AJ then please forward me details of the QSO and a SSAE (note new 24 cent postage rates for inland mail). Your details will then be forwarded to East Germany.

K4YT in Africa: Karl Rentz K4YT, says his African trip has been postponed with a new scheduled stop in Mexico City. His earlier plans were to spend about a week in each country and to operate where possible commencing with TY then 5N, TR8, TN8, TL8, 9Q5, 5Z4 S79 and ET. All QSL via W2TK.

PT-9 Prefix: This one is for the new Brazilian state of Mato Grosso do Sul, the prefix being assigned by the Brazilian Communications Ministry. Remy Flores Toscano, PT2VE, Presidente de LABRE, passes along the complete list: PP1 Espirito Santo (ES), PP2 Goias (GO), PP5 Santa Catarina (SC), PP6 Sergipe (SE), PP7 Alagoas (AL), PP8 Amazonas (AM), PR7 Paraiba (PB), PR8 Maranhao (MA), PS7 Rio Grande do Norte (RN), PS8 (Piaui (PI), PT2 Brasilia (DF), PT7 Ceara (CE), PT8 Acre (AC), PT9 Mato Grosso do Sul (MS), PU8 Amapa (AP), PV8 Roraima (RR), PW8 Rondonia (RO), PY1 (Rio de Janeiro (RJ), PY2 Sao Paulo (SP), PY3 Rio Grande de Sul (RS), PY4 Minas Gerais (MG), PY5 Parana (PR), PY6 Bahia (BA), PY7 Pernambuco (PE), PY8 Para (PA), PY9 Mato Grosso (MT) and PYØ Oceanic Islands.

LA3FL/MM aboard luxury cruise liner Royal Viking Sea. The vessel was in the port of Auckland for 11 hours on Monday, 8th February in the course of an 87 day world cruise when it was the pleasure of your scribe accompanied by ZL1CH, our XYL's and a friend to visit Chief Radio Officer Per Halveston on board ship and later entertain him ashore. The ship is of the Royal Viking Line with Norwegian officers and a multi-national crew which included two New Zealand young ladies.

The ship is a veritable floating hotel with big lounges and a dining room large enough to seat all 500 passengers in one sitting. The crew numbers 300.

Per's cabin is self-contained and includes his ham station of TR7 to a Hustler all band vertical. My first QSO with him was early in December of last year from near Acapulco, Mexico, when

the ship was on a North American cruise and again in the following January when near Tahiti on the way south to New Zealand. The cruise started on 8th January from Fort Lauderdale, Florida, then through the Panama Canal to Los Angeles and across the Pacific via Tahiti. Later, in mid-Tasman en route to Sydney his signals were good on 40, 20 and 15 metres. Later ports of call were in Indonesia, Malaysia, etc., to the Mediterranean via Suez, then Madeira Islands before the Atlantic crossing back to Fort Lauderdale by 6th April.

Per has available an achievement certificate if you QSO him marine mobile on 4 bands in CW mode. Only 2 bands are permitted in each UTC day. Look for him 028kHz approx. on the bands until the month of June this year when he goes home to Norway on holiday. During April and May the ship will be on short cruises within the Caribbean and North American areas. The certificate is featured with illustrations in 73 Magazine issue of December 1981.

From his home QTH within the Arctic circle, again with vertical antenna, ZL has been worked a few times but usually finds it difficult to be heard through the strong signals from mid-Europe. Next time when you are working into Europe please give a thought to the low power stations that may be calling under the big signals. Per is very pleased to have worked ZL4KI on four occasions from his home station. Perhaps there is a pipeline between Alta in Norway situated 70°N 23°E and Otatara in New Zealand? Congratulations to ZL4KI. Some ZL's will have received their LA3FL/MM QSL cards direct bearing a New Zealand postmark in the mail posted by Per at the CPO in Auckland whilst in port. The mailing address for LA3FL/MM is to Per A. Mikalsen, M/S "Royal Viking Sea", P.O. Box 1612, Vika, Oslo 1, Norway.

Friday evening DX discussion group: Please note that a change of time has been made to now commence at 0730z during both winter and summer. The frequency remains unaltered at 3 600kHz plus or minus.

My thanks to QRZ DX, CQ Magazine, Geoff Watts DX News, Friday night group and telephone callers.

Good DX es 73 to all, Ron.

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SUPREME AERIALS – BEST HEARD ON THE AIR

Contests & Awards

with **JOCK WHITE** ZL2GX
and assistant **PETER KENNY** ZL2QK

CONTEST CALENDER

April 3/4: VS6 Activity Days.
April 3/4: Polish CW Contest.
April 3/4: ARRL Open CD Phone Party.
April 7/8: DX YL to NA YL CW Activity.
April 10/11: CARL Commonwealth Contest — PHONE.
April 14/15: DX YL to NA YL Phone Activity.
April 17/18: **THELMA SOUPER MEMORIAL CONTEST — WARO.**
April 17/18: Polish Phone Contest.
April 17/18: ARRL Open CD CW Party.
April 17/18: EME Contest (Part 1).
April 17/18: ARCI QRP SSB Contest.
April 24/25: Swiss "H-26" Contest.
April 24/25: King of Spain Contest.
April 24/25: YL ISSB Phone QSO Party.
May 1/2: County Hunters SSB Contest.
May 1/3: Georgia QSO Party.
May 8/9: USSR "CQ M" Contest.
May 8/9: World Telecomm. Phone Contest.
May 15/16: World Telecomm. CW Contest.
May 15/16: **SANGSTER SHIELD.**
May 15/16: EME Contest (Part 2).
May 15/17: Michigan QSO Party.
May 22/23: Rocky Mountain QSO Party.
May 29/30: CQ WORLD WIDE WPX CW CONTEST.
June 12/13: ARRL VHF Contest.
June 12/13: South Africa CW Contest.
June 1920: All Asian Phone Contest.
July 10/11: **MEMORIAL CONTEST.** Rules in May "Break-in".
August 15: **QLF** — for fun lovers!
Sept. 14: **FREQUENCY MEASURING CONTEST.**
Oct. 2/3 & 9/10: **VK/ZL/OCEANIA DX CONTESTS.**

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

CARF

*** remember the CARF awards in last month's "Break-in" . . . well. . . . the Canadian Contest on 1 July will help you get qualifications for this. That is of course, if you still need any after the CARF Commonwealth Contest . . . . make a note of 1 July if you enjoy Canadian contacts . . . . . .

ZL-82

*** the first ZL-82 award (for 1982 ZL contacts) went to VK4LZ before the end of January — and other overseas applicants have sent in hoping the award is "on". YES — it IS . . . but with only 50 certificates available. Over to you . . . .

STOLEN MAIL

*** this is such an unusual occurance — the first time I believe. Mail deliveries to "152" are usually quite large and as our "postie" says — "you get more mail than some whole blocks and more!" . . . it's sometimes delivered by sack . . . . SO . . . . if there is NO mail in the box, we are surprised. Beatie checked the box several times but there was nothing — and THEN she saw an opened envelope with my address. It was from the Gen. Secty. Later — items of mail were found in gardens and shrubs on either side of our letter box — including a number of WAP certificates sent to ZL1HV for his signature and later recovered from the Police Station. Other residents had trouble on this same day. When I reported this to the Postal Authorities it would be fair to say that their interest was not far removed from negligible . . . . their responsibility ceases with the delivery. I guess this is fair enough. Did YOU know this? The Police were advised — little they could do . . . BUT . . . I know the matter was discussed at their "morning meeting" and observations are being made. I believe all mail delivered that morning has been accounted for . . . but . . . it gives one food for thought. Please don't recommend a locked letter box. This sounds fine but isn't very practical in view of the various sizes of articles to be catered for . . . . a box at the PO . . . .hhmmmmmmm.

VISITORS

**** oh YES . . . we receive a number and I seldom comment but it was a pleasure to welcome new DX Editor, Ron ZL1AMM recently. He arrived on the day my mail problems descended upon us . . . coincidence? It was delightful to have the opportunity of chatting with another NZART officer . . . . .

IBERO-AMERICAN CONTEST 1982

**** this is a PHONE only deal during last full weekend in May (29/30 May this year) on all bands — certificates for 50 contacts or more. . . . for contacts with Ibero/American countries as follows . . . . CE : CO : CP : CR : CT : C9 : CX : C31 : DU : EA : HC : HI : HK : HP : KP4 : LU : OA : PY : TG : TI : VE : YN : YV : ZP : 3C. Rules are not too clear — "a stn & multiplier be wkd once per band". Final score is multi X no of contacts. Logs to Box 262, GRANOLLERS, Spain before 15 July.

CQ WORLD WIDE WPX

*** if this is new to you . . . I can supply full info — SASE . . . .

4 FROM 44 AWARD

*** looks "nuts" . . . but is GREAT! The award made available for FOUR contacts with SOLOMON ISLAND stations "44" dating from 7 July 1978. The certificate is MOST attractive — coloured picture — available from SIRS, Box 418, Honiara, Solomon Islands for $2 or 12 IRC. Send certified list of stations worked.

Beacon Report

by your 28MHz Beacon Correspondent
CLIVE LIDDELL ZL3ND

Activity here has been restricted by a two week's holiday in the northern part of the South Island. It was a relief to listen to W and European DX on 3.5MHz without the usual man-made city hash. Although I did hear beacons on the "wire in the trees" antenna, it was obvious on my return that the band had improved. DLØIGI, GB3SX, 5B4CY, HG2BHA and DKØTE all coming in at 0700z.

According to ARRL propagation predictions the solar flux is higher than that used for their predictions so that communication should be possible on higher frequencies than those published. More solar disruptions are due however. There was apparently a big one on 23-2-81.

WD4HES Last heard on 8-1-82. I have no information on the fate of this beacon.

VU2BCN 28 295 Reported by ZL3ME and ZL1BAD. Thanks. As soon as I returned from holiday I tuned far enough to hear it. Audible during the early evening.

ZL2MHF Not heard as frequently as before due possibly to a combination of lower power and different propagation conditions.

By courtesy of ZL3TNK (Dr Andree von Biel of Physics Dept., Univ. of Canty.) I have a list of the co-ordinates of the probable "touch down" points on the paths of some of the more frequently heard beacons making a number of assumptions as to the conditions of propagation along the paths. More of this later, I hope.

Last, some news about beacons in other bands from "World Radio", Nov. 1981, by courtesy of ZL1HV.

The Federal Communications Commission has authorized the establishment of an experimental radio beacon on the bands 10.100-10.150, 18.068-18.168 and 24.890-24.990MHz. An important element is securing data on propagation under weak signal conditions, typical of natural disaster situations. It will be recalled that this use is one of the major reasons for these new authorizations, the first in many years.

The experiments will include two emission types, three operating modes and two time phases. Basic emission is unmodulated carrier (AØ), interrupted each 10 minutes for an SSB (2.8A3J) identification and announcement, this occurring at 2, 12, 22 . . . minutes past the hour. Announcement will be of the form: "This is FCC-authorized experimental station KK2XJM, Daytona Beach, Florida. QSL via W4MB. Next operation will be repeated on .....MHz starting on .....," and will be repeated.

Initial operations will be at 3 watts ERP, on 10MHz, commencing about the first of October. In stages, the schedule depending on results, operation will include 18 and 24MHz.

73, Clive ZL3ND

Satellite putter-uppers

It may come as a surprise to many that the American/Russian monopoly of space launching facilities is no more. The European Space Agency (of which Belgium, Britain, Denmark, France, Ireland, Italy, the Netherlands, Spain, Sweden, Switzerland and West Germany are members), Japan, India, China and Italy (which has an independent space programme) all have launch facilities. ZL1HV

GOOD GEAR FROM VICOM

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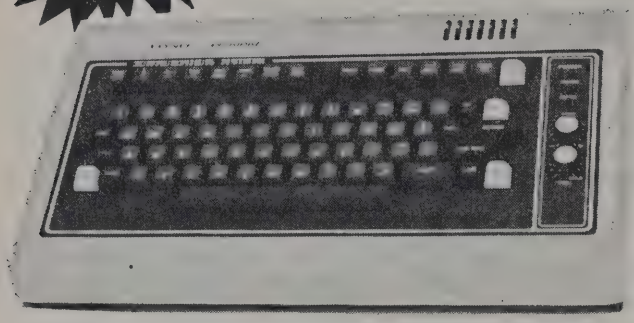

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Silent Keys

The Association deeply regrets to record the death of the following and extends its sincere sympathy to the bereaved.

E. C. AMON ZL1ACL (EDDIE)

Matamata Radio Club and NZART have lost a real stalwart with the passing of Eddie Amon ZL1ACL on Feb. 14th, 1982.

In 1938 Eddie's interest started and Mac ZL1KN fired up Eddie to sit the ham exam in 1939. CW was then the stumbling block, but after the war an experience in DIV. SIGS. up in the islands, CW was no problem. After the war Eddie married Edna, started a business at Whitikahu, and also a family of two boys, Llew and Charles. By 1960, Llew at 14 years was also interested, so father and son sat and passed the ham exam in that year. Huntly and Hamilton Branches knew them as members, and Mac ZL1KN and Ron ZL1AFC (now 2ARA) exerted considerable influence on the Amon ham activities. Field Day with a ZC1, home brew gear, even 2 metre mobile rallies, were some of the early efforts. Moving to Matamata in 1962 started Eddie working for branches. Matamata Radio Club became alive, and training classes for budding hams, National Field Day, AREC and two metre mobile rallies all got Eddie's enthusiastic attention.

In 1968 as a result of meeting and discussing ham affairs over a wide area of Waikato, Eddie was elected a Councillor and was re-elected each year until 1981, such was his worth he was First District Vice President for five of those years. Truly exceptional service to NZART and New Zealand Amateurs.

The presence of nearly forty hams at the very large funeral in Matamata showed the warmth of feeling for ZL1ACL, and leaves Edna, Llew (ZL4LI) and Charles with the knowledge of how well Eddie was respected by his fellow hams, and his RSA mates and friends.

Bill Coates, ZL1GQ.

Editor's Note:
Edna sends her grateful thanks for the many expressions of sympathy she has received from Eddie's fellow Hams and says they have been of great comfort to her.

HERBERT LAURENCE SHUTTLEWORTH

It is with deep regret that the Southland branch reports on the sudden death on February 24th of Bert Shuttleworth ZL4IO.

Bert was first licensed for amateur radio in 1946 with upgrading to his HF permit in 1949 and to grade I in 1970.

During World War II he saw service in the airforce on Radar installations in England, Ireland, Gibraltar, with a further year as a instructor at Wigram.

Bert will long be remembered by the Ham fraternity and others for his countless projects and articles that he produced which later appeared in "Break-in" as a continuing series. Many of the articles which range from valve type SSB transceivers, linear amplifiers, transistor circuitry, digital frequency counters, plus several other writings, are still being referred to for ideas today.

Many hours of patient research and development went into these projects before they could be written up as a workable, useable project for "Break-in". One such article was the "Southland Branch" 2 metre transistor transceiver resulting in several hundred being built in New Zealand and overseas. This same unit won an award and recognition in UK and was published in RSGB Bulletin.

On three occasions he was presented with the NZART award for the best article for the year.

When the Civil Defence Organisation was formed in Invercargill Bert was communication officer for several years.

Until his retirement in 1980 Bert was Managing Director of the electrical contracting firm of H. Shuttleworth Ltd, which was started by his father in late 1920's.

Though he was very involved in amateur radio, he found sufficient time for service with the Invercargill Rotary Club, of which he was a past Director.

He also was a strong supporter of the Crippled Children Society and other kindred charitable organisations.

Bert will be sadly missed by friends worldwide and amateur radio has lost an ardent supporter.

To his wife Margaret, son and two daughters, we offer our deepest sympathy in their great loss.

Warren Blain, ZL4PJ.

LES WASS ZL3UX

Les had been ailing for some time and passed away in November last. He was licenced in 1929 as ZL2GY at Napier aged 16 and was there during the 1931 earthquake and moved to Tawa Flat just after WW2. He enlisted and was stationed at the Quarter Master store Wellington, awaiting to enter Signals then to Waiouru Army Station. 1942 a course at the E & W school, then to Gisborne and back to Waiouru, a DF course at Wigram, Air Radio New Plymouth, after that lot civi life Hastings about 1946. Operated 80 and 10 metres, active in branch activities there. 1950 moved to Blenheim, 1956 President of Club. A plasterer and builder by trade, on one job they let him down on the inside of a foundry chimney on a rope to do the plastering.

Held call ZL3UX for 18 years. A real craftsman, ardent home brewer, only commercial gear was Heathkit receiver. Been friends for 18 years. I do miss him very much. Many happy hours we spent together, deepest sympathy to his wife Jean and relatives.

George, ZL3FX.

Old Timers Club

Compiled by **ARTHUR ALLEN** ZL1JQ
Assisted by **COLIN MORRISON** ZL1BGJ

Preparation of the register of Old Timers Club members, referred to as the Blue Book, is proceeding apace. The amount of voluntary work which has gone into this project has been considerable. For this plaudits are due to our Secretary Gordon Brown ZL2BD, for his work in compiling, from his considerable filing system, the material which Waldo Hunter ZL1CR is so efficiently and professionally turning into the booklet which eventually we will all highly value. As one privileged to have seen the proof copies, I can only say to Old Timers, place your order with ZL2BD now. It is hoped that copies will be available at the Napier Conference.

According to Len Spackman ZL1AC, the amateur radio society in Poland, the Polish equivalent of the NZART, has not long since celebrated the 50th anniversary of its founding. Congratulations from the NZOTC.

"Break-in" of Jan-Feb 1982 contains an obvious error. On page 5, first column, item H, it is stated that the 30m band was last used in 1932. The correct date should read "midnight Dec. 31st 1928." The present harmonic related bands came into use from midnight Jan. 1st 1929. Thanks to Arthur Stevens ZL1MT for indicating this error. error.

An interesting TV programme, 24-2-1982 entitled "Movietone—it spoke for itself", showed rare newsreel film of Signor G. Marconi and the Pope at the opening of the new Vatican broadcasting station in Rome in 1936. We seldom see Marconi on the moving medium although still photos of him are well known.

Writing of rarities, ZL1JQ was privileged recently to behold and hold, a 12" recording made in the Stannage Recording Studios in Auckland, sometime pre 1939, of the late Norman Edwards ZL1AA, pounding out 5 letter groups of words at 20 wpm. The amateur owner of the disc is to transcribe the material on to cassette tape. The writer, ZL1JQ, possesses another ZL1AA rarity, also pre-war. It is a short length of embossed tape of 1JQ's morse made in Norm's shack on his tape strip recorder, sometimes called a code reader. In case you might ask—yes, it was a reasonable fist!

One last word. "Break-in" being a "ham" magazine, and I the writer a "ham", (and I won't argue if some say that I am a ham writer as well!) I suppose I should try to find "ham" topics for you. If I do not, I still hope you OT's out there will find some interest if I deviate into radio related but not necessarily "ham" items. Should this not satisfy you, I have an empty letter box just waiting to receive **your** contributions. Finally, I admit to little enthusiasm to the term "ham", but I accept it on the basis of its long usage. Like "Old Timer" it is always open for discussion!

73, ZL1JQ

W.A.R.O.

N.Z. Womens Amateur Operators Club

Secretary

LESLEY McNAMARA ZL1BOR

[redacted]

P.O. BOX 8 NGARUAWAHIA

What a glorious summer we have had!

The beach with sea and sun must have been enjoyed by most of our members this year. I have to admit that your Secretary has found little time to keep in touch, although I did meet Sharyn ZL1TQV and you would never guess where — but for six weeks in February and March both our families must have enjoyed trying out Indonesian meals on Tuesdays (after night school on Mondays)!

I returned from the beach to a delightful homecoming — letter from three new members awaiting me.

It is time to remind members that election time is here again. We need nominations for President, Vice-President, Secretary and Treasurer. If you know anyone who is willing to serve in one of these positions, please get in touch with me C/o Box 8, Ngaruawahia. Nominations close 30 April.

County Hunting — by Pearl ZL2QY

Recently, while holidaying at Blackhead Beach in Patangata County, Bert and I thought it would be an opportunity to activate this comparatively rare County for both the New Zealand County Hunters (Overseas Net) on the 80 metre band and the West Coast Stateside County Hunters on the 15 metre band. We had a busy and rewarding time on both these nets and the interest and friendship shown was a most satisfying experience. It was quite surprising to us both to note the enthusiasm with which the Stateside folk seek this Award. Of course, the deal was a two-way affair as I am also working for the U.S. Counties Award (about 3080 in all!) Most of the overseas County Hunters seem to be concentrating on achieving all 112 of the N.Z. Counties.

In talking to these folk several mentioned that they hoped to visit New Zealand and to gain the Award, or at least part of it, while mobile in this country. Chatham and Stewart Islands may prove difficult in attempting "112" although I recall a QSO with someone working from Stewart Island while "bicycle-mobile"!

WARO NETS

Since we have a number of new YLs, just a reminder to them and their OMs that WARO nets are held every Monday night on 80 metres at 8 pm. The first three Mondays are the South Island, the National and the North Island Nets, in that order. YLs are invited to check in to the Net Controller (Ruth ZL3PL, Gael ZL2SZ, Cathy ZL2ADK) by giving their call signs on **any** of these evenings. Frequency 3 700kHz plus/minus.

The fourth Monday is a **CW Net** run by Greta ZL2AGS (8 pm), 3.535MHz.

Meet Splatterer Sid,
Who's a bit of a 'lid';
The kind of Ham pest we all know ~
He needs plenty of room, and you'll hear his voice boom
10 Kilohertz up and below.
Although you may shift, his rig has some drift;
Once again he will splatter your spot.
With his crass over-driving, it seems he's contriving
The whole of the bandwidth to blot.
He's having a natter, complete with his splatter,
Unmindful of other Hams who,
Because of his crust, give up in disgust,
Are you sure this couldn't be YOU?!

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MAY 1982

	GMT	00	02	04	06	08	10	12	14	16	18	20	22
N.Z. To													
Singapore	OWF	31	31	31	28	21	16	14	13	12	12	11	13
	ALF	12	13	14	14	12	7	0	0	0	0	0	10
Tokyo	OWF	24	27	30	28	20	16	14	13	12	11	20	25
	ALF	14	14	14	13	9	0	0	0	0	0	8	12
Johannesburg SR	OWF	9	9	13	0	21	17	15	13	13	12	9	9
	ALF	10	10	9	0	12	12	11	6	0	0	0	7
Johannesburg LR	OWF	14	10	8	24	19	16	14	13	12	14	20	17
	ALF	14	13	10	10	13	14	14	14	13	13	14	14
Nairobi SR	OWF	11	9	28	27	21	16	14	12	12	11	13	16
	ALF	11	11	11	12	14	14	12	9	0	0	0	9
Nairobi LR	OWF	21	19	20	22	18	15	14	13	12	17	18	20
	ALF	13	12	8	12	14	14	14	14	14	14	14	14
Cent. Africa SR	OWF	23	21	19	26	21	16	14	12	11	11	13	24
	ALF	11	11	10	12	14	14	14	12	7	0	0	9
Cent. Africa LR	OWF	22	19	17	23	19	16	14	13	12	15	25	23
	ALF	14	12	9	11	13	14	14	14	13	14	14	14
Nicosia	OWF	17	18	25	24	22	17	14	13	12	12	14	21
	ALF	12	13	14	14	14	14	13	11	0	0	0	10
London SR	OWF	13	13	13	16	18	16	14	13	12	11	16	14
	ALF	14	14	14	12	12	13	13	13	11	10	10	13
London LR	OWF	17	17	15	18	15	13	12	11	11	12	20	19
	ALF	10	10	3	8	12	13	14	14	13	10	6	10
Barbados	OWF	23	25	25	20	17	14	13	13	12	16	29	29
	ALF	12	10	0	0	0	0	11	13	14	14	13	12
New York	OWF	21	20	17	15	15	13	13	12	12	18	21	20
	ALF	13	11	7	0	0	0	9	12	14	14	14	14
Minneapolis	OWF	20	21	18	14	14	12	13	13	12	17	21	20
	ALF	13	12	8	0	0	0	0	11	13	14	14	14
San Francisco	OWF	28	29	29	24	20	16	15	13	12	20	27	30
	ALF	14	12	9	0	0	0	0	0	11	13	14	14
Rio De Janeiro	OWF	25	18	16	15	13	14	0	0	13	0	0	0
	ALF	10	9	0	0	0	0	0	0	12	0	0	0
District	OWF	10	10	9	7	6	5	4	4	4	3	6	9
	ALF	2	2	2	0	0	0	0	0	0	0	1	2

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Southern Cross Electronics 66, 67, 68 IBC
Tricity House 25, 55
Vicom 11, 44, 45, 58

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1KB—Thomson, D. D., P.O. Box 52, Opoutama.
1KL—Paton, E. J., 32 Pohutukawa Road, Whenuapai.
1LW—Prinn, G. W. H., 199 Whatawhata Road, Dinsdale, Hamilton.
1OG—Lambie, L. B., 1 The Lea, Papakura.
1OZ—Mason, J. A., Wairere Road, Waitakere.
1PD—Edgar, J. E. R., 32 Robley Crescent, Glendowie, Auckland 5.
1PU—Nathan, I. J., Unit 2, 6 Snead Place, Hamilton.
1AFF—Reed, H. J., 15 Elizabeth Avenue, Te Awamutu.
1AFL—Flatt, D. A., 2A Somerfield Street, Ellerslie, Auckland 5.
1AJC—Jones, R. B., 5 Harbour Road, Ohope, Whakatane.
1AJQ—Hogan, A. H., 17 Karamu Street, Taupo.
1AJY—Barratt, M. P., J. Irwin Road, Awhitu, R.D. 4, Waiuku.
1ALW—Winthrop, R. B., 104 Trig Hill Road, Onetangi, Waiheke Island.
1ANB—Dimmock, T. L., 20 The Crescent, Waihi Beach.
1AOQ—Upsdell, D. M., 19 Bonito Place, Glenfield, Auckland 10.
1ASH—Williamson, O. G., 11 Keddell Street, Frankton.
1AUF—O'Hagan, M. G., St. Patrick's Presbytery, 59 Queen Street, Te Puke.
1AUT—Brennan, P. T., 55 Whitmore Street, Kihikihi.
1BBL—Taylor, M. F. W., 9 Earl Place, Acacia Bay, Taupo.
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1TFF—Dreadon, A. H., 49A Oceanview Road, Waihi Beach, Waihi.
1THX—Moretti, G. S., 471 Albert Street, Palmerston North.
1TNB—McKenzie, D. W., 55 Clarke Road, Hobsonville.
1TSP—Stewart, L. F., 54 Forest Lake Road, Hamilton.
1TYE—Brien, G. J., 33 Rosalind Road, Glenfield, Auckland 10.
1TZM—Van Der Werff, M. L., 46 New North Road, Eden Terrace, Auckland 1.
1UBS—Watchman, S. J., C/o (Mr R. R. Watchman), Regional Engineer's Office, Post Office, Auckland.
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1UCZ—Tooke, B. H., 11 Alexander Road, Whakatane.
1FUV—Turton, J. W., C/o Puriri Park, Orewa.
1UGT—Gulliver, K. E., 2/3 Memorial Drive, Whangarei.
1UHA—McLaren, G. C., Flat 4, Montana Flats, Grey Street, Whangarei.
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2AP—Eade, A., 137 Winchester Street, Levin.
2HJ—Garrett, W. E. A., 8A Belair Avenue, New Plymouth.
2IM—McLea, Q. F., 322 Devon Street West, New Plymouth.
2IQ—Cossey, R., 29 Surrey Road, Richmond.
2IY—Gorman, W. D., 15 Hildreth Street, Karori, Wellington 5.
2MW—Clark, M. J., 115 Maxwell Road, Blenheim.
2SR—Carran, S. R., 26 Arawa Road, Hataitai, Wellington 3.
2TZ—Scott, L. V., 7/46 Washington Avenue, Brooklyn, Wellington 2.
2ACR—Wagenvoort, P. J., 127 Hataitai Raod, Hataitai, Wellington 3.
2ADR—Brown, K. L., 210 Sydney Street, West Thorndon, Wellington 1.
2AGK—Bartlett, J. R., Flat 1, 56 Winston Street, Crofton Downs, Wellington 4.
2AJE—Carpenter, E. D., 21 York Avenue, Tamatea, Napier.
2ANH—Hoskin, J. C., 5 Tarata Street, Stoke, Nelson.
2APK—Campbell, E. P., 13A Franklin Terrace, Havelock North.
2APZ—Benson, K. J., 25 York Street, Hawera.
2AYQ—Hill, K. J., 27 Welland Place, Wellington 2.
2BDB—Herbert, J. W., 2 Rose Flats, 17 Totara Street, Upper Hutt.
2BDU—Pickett, B. T., 8 Woodstock Place, Palmerston North.
2BFW—Peters, R. F., 50 Arapiki Road, Stoke.
2BJL—French, P. W., 77A Pahiatua Street, Palmerston North.
2BLS—Lavery, M. W., 196 Geraldine Street, Christchurch 1.
2TCF—Clifford, I. R., 9 Falcon Street, Porirua.
2TFB—Cox, R. J. C., 20 Storey Avenue, Hamilton.
2THH—Robbins, B. J., Quartz Hill, Private Bag, Wellington.
2TII—Prosser, R. H. C., 9/14 Kirkwood Avenue, Ilam, Christchurch.
2TIS—Winton, L. J., 44 Coventry Avenue, Napier.
2TME—Meikle, D. A., RNZAF Base, Ohakea.
2TPO—Wallis, G. T., 45 John Street, Stokes Valley.
2TRE—Jennings, S. B., 91 Clouston Park Road, Upper Hutt.
2TSF—Chisholm, W. J. R., 37 Sutherland Crescent, Melrose, Wellington 3.
2TSI—Allison, D. N., 106 Sidlow Street, Strathmore, Wellington 3.
2TSU—Bristow, E. J., 77 Matcher Street, Wanganui.
2TTF—Christianson, N. J., 133 Cecil Street, Wadestown, Wellington 1.
2TVA—Burney, G. L., 28 Hawthorne Crescent, Stokes Valley.
2TWE—McIntosh, D. C., 38 Gloucester Street, Palmerston North.
2TXT—Martin, E. D., 2 Dorothy Place, Bay View, Napier.
2TXX—Penney, B. J., 20 Konini Street, Nelson.
2UBQ—Freer, R. I. R., 240 Kennedy Road, Napier.
2UCJ—Stewart, P. J., Akatarawa Road, C/o Postal Counter, Post Office, Upper Hutt.
3BB—Gray, G. W., 6 Muir Street, Wanganui.
3DD—Mitchell, A. R., 700 New North Road, Auckland 3.
3DY—Firman, R. K., 181 Morgans Road, Timaru.
3FA—Davis, M. C., C/o Napier Hospital, Napier.
3KO—Stroobant, A. D., 19 Rothesay Bay Road, Rothesay Bay, Auckland 10.
3OD—Barnes, G. J., 40 Collins Street, Christchurch 2.
3TU—Sharnock, M. A., 4 Melville Street, Christchurch 5.
3VY—Dixon, A. P., 16 Kildare Terrace, Lincoln.
3WF—Wade, D. L., 8B Heron Street, Christchurch 7.
3WM—Oliver, J. A., Main Road, Tai Tapu.
3ACV—Hickman, K. A., 5 Cotswold Avenue, Christchurch 5.
3TAW—Muir, D. N., 173 Grimseys Road, Christchurch 5.
3TCW—Hickman, A. E., 5 Cotswold Avenue, Christchurch 5.
3TFB—Bool, W. J., 32 Trafalgar Street, New Plymouth.
3TKN—Hill, J. R., 253 Avonhead Road, Christchurch 4.
3TLN—McKenzie, J., 1 Teviot Street, Invercargill.
4AL—Eastern Southland Branch N.Z.A.R.T. (Trustee: A. N. Allan), R.D. 4, Charlton, Gore.
4IR—Jensen, M. D., 76 Stafford Street, Hokitika.
4LO—Singleton, J. (Mrs), Marliwich Carrying Company, Coal Creek Flat, Roxburgh.
4NH—McRodden, P., 93 Tomahawk Road, Andersons Bay, Dunedin.
4PX—McMillan, A. D. K., C/o 47B Warspite Avenue, Porirua.
4TAV—Gordon, G. P. C., 9 Salmond Street, Dunedin.
4TDI—Murgatroyd, E. M., 97 Factory Road, Mosgiel.
4THD—Johnston, W. K., 24 Brandon Street, Alexandra.

ADDITIONS

1AOS—Russell, C. G., 4 McDowell Crescent, Glenfield, Auckland 10.
1ASP—Abbott, R. F., 9 Fifteenth Avenue, Tauranga.
1BQK—Shackleton, R. V., 39 Norman Senn Avenue, Kaitaia.
1BTR—Jeffares, R. J., Runciman Road, R.D., Pukekohe.
1BUF—Mullions, R. D., 436 Ngongotaha Road, Rotorua.
1BWZ—Harold, E. A. E., 32 Ellis Avenue, Mt. Roskill, Auckland 4.
1BXB—Grut, M. A., 97 Tiri Road, Whangaparaoa.
1BXI—Flower, C. B. G., 62 Verbena Road, Birkdale, Auckland 10.
1TPO—Vos, P. M., 22 Clarke Road, Hobsonville, Auckland 10.
1UAH—Leighton, D. G., 23 Kauri Crescent, Matamata.
1UIA—Paton, J. S., 1 Tamariki Avenue, Kelston, Auckland 7.
1UIB—Murray, K. G., 55A Mains Avenue, Whangarei.
1UIC—Gilbert, A. J., Bruntwood R.D. 1, Cambridge.

1UID—Richmond, M. N., Oripiro Road, Kerikeri.
1UIF—Welcome, P. M., 79 Evelyn Road, Howick.
1UIG—Abbot, S. A., 6 Hanna Street, Te Aroha.
2ABU—Van Der Burgh, J. E. C., 19 Penny Lane, Silverstream.
2BLW—Batt, L. A., 33 Waterhouse Street, Masterton.
2BNB—Walker, R. A., 23 Kaka Street, Stoke, Nelson.
2UFJ—Marr, N. C., 20B Weld Street, Blenheim.
2UFK—Manning, F. A., 5 Paisley Terrace, Karori, Wellington 5.
2UFL—Cotter, M. C., 24 Rodney Street, Woburn, Lower Hutt.
2UFM—Lambert, A. C., 44 Strange Street, Waitara.
2UFN—Blyde, G. R., 18 Egmont Street, Kaponga.
2UFO—Davies, S. P., 226 Mitchell Street, Brooklyn, Wellington 2.
2UFP—Cordy, M., 50 Strathmore Avenue, Strathmore Park, Wellington 3.
2UFQ—Asmus, J. M., 16 Palliser Place, Palmerston North.
3TPP—Gresham, P. M., 423 Bower Avenue, New Brighton.
3TPQ—Moyle, T. N., 285 Avonhead Road, Christchurch 4.
4QR—Dickie, P. J., Myross Bush, 2 R.D., Invercargill.
4TJT—Holland, J. P., 5 Dawson Place, Alexandra.

DELETIONS

1HJ—Snow, A. N. H.
1PT—Twiss, D. P. L.
1VN—Billing, G.
1APV—Harrison, A. F.
1AXJ—Bateman, G.
1AXW—Sharp, R. A. D.
1BGU—Rundell, L. I.
1TBN—Lyall, R. G.
1UAT—Mullions, R. D. Now ZL1BUF.
1UEW—Shackleton, R. V. Now ZL1BQK.
1UFM—Abbott, R. F. Now ZL1ASP.
1UFX—Grut, M. A. Now ZL1BXB.
1UHE—Flower, C. B. G. Now ZL1BXI.
2AFM—Galyer, R. A.
2FH—Fitzgerald, T. M. F.
2AZZ—Riverside Radio Club (Trustees: Mr A. J. Little and Mr P. Weston).
2BAG—Martin, P. J.
2BCR—Layton, M. L.
2BIP—Staples, P.
2BKH—Barnes, G. J.
2TLH—Smith, W. H.
2TSS—Henry, A. S.
2TTI—West, J. D.
2TVO—Shand, T. J.
2TVW—Layton, S.
2TVY—Carr, P.
2UAD—Boyle, A. J.
3BU—Docherty, W.
3OF—Smith, T. C.
3TV—Greene, R. S.
3TAP—Van Schooten, L. A. A.
3TIJ—Freeth, C. A.
3TLL—Kerr, B. A.
3TND—Taylor, M. L.
4DA—Harman, I. A.
4FS—Stevenson, R. F.
4HM—Rolton, G. L.
4TBZ—Dickie, P. J. Now ZL4QR.
4TDD—Forbes, G. F.

THE WANGANUI AMATEUR RADIO CLUB

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will be holding its 21st

JUNK SALE

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ON SATURDAY 1st MAY 1982

Commences 9.30 a.m. Doors Open 8.00 a.m.

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SATURDAY 8th MAY

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CAMBRIDGE

AUCKLAND VHF GROUP INC. CRYSTAL OFFER

The group would like to apologise for the delay to the many people who availed themselves of the offer. The 6500 individual crystals ordered created a mammoth undertaking which was completed by the end of December.

If anybody who participated in the offer feels that their order has not yet been completed and has not heard from the group, please write urgently to:

CRYSTALS
AUCKLAND VHF GROUP
P.O. BOX 10138
BALMORAL
AUCKLAND 4

STOLEN EQUIPMENT

Duncan Scott ZL2DD reports that the lock of his car was forced while it was parked in Wellington. His almost new **AZDEN PCS/3000 2 metre FM** rig was stolen complete with mobile mount and rig. Serial number is 73201.

Why not make use of . . .

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Post to P.O. Box 1733, Christchurch.

WANTED: Communications general coverage receiver in good order. Tube or solid state. Details please — ZL1BAY, P.O. Box 81, Kaitaia.

WANTED: In good condition, all band receiver, AM, SSB and CW operation. Either valve or transistor, but valve preferred. — J. W. L. Williams ZL4103, 14 Limerick St., Alexandra.

FOR SALE: Kenwood TR2400, hand held, complete with quick charger, home station and charger, car adapter and soft case. Cost $478, sell for $380 or near offer. — ZL1TUA, Box 35 Edgecumbe or phone Whakatane, 49-734 day time.

FOR SALE: Mosley 3 element TA33 Beam — good condition, $350. Alliance rotator U200, $70. Belcom Linear 2, 2m SSB mobile rig, $250. Phone — ZL1TZO, Auckland 501-527.

WANTED: To buy or borrow to copy; circuit for ZA1 or ZC1 RF amp. Contact — Tony ZL3DQ, Sept. "Break-in" address. Phone 794-452 Christchurch.

FOR SALE: Pet Microcomputer Toolkit for all basic 2.0 (new RoM) models, $40. KL4M Music Unit with software, 4-part harmony system for Pet Computer, $50. Weller WTCN Soldering Station, new, in carton, $75. Lots of programmes and books for Commodore Pet Computers — ZL2TDU, G. J. Walker, P.O. Box 5104, Port Nelson.

FOR SALE: FL DX 400 transmitter and FR DX receiver including 6m and 2m converter, speaker and microphone. Very good condition, $450.—Ian Rhodes. Phone Auckland 480-965 after 5 p.m.

SELL: Tentec Transceiver, Omni A, 160-10m. Full break-in keying, 200 watts input solid state, 20 amp power supply, microphone, built in squelch. Reasonable offers wanted, 2½ years old — ZL1WT, Phone 4726 Te Awamutu.

WANTED: Reasonable communications receiver, also 1:1 balun and low pass filter, suitable for FT101E. Reply—ZL4LN, Callbook address.

WANTED: Valve sockets for 4CX250. Would prefer VHF type or consider purchase 432 linear amplifier. — ZL1TWR, Callbook address.

FOR SALE: Icom IC551 6m Transceiver, $700 ono. Alliance HD73 Rotator, never used, $275 ono. Galbraith PS1 Power Supply, $75 o.n.o.—ZL2BGJ, Callbook address.

WANTED: Old-time plug-in coil formers, Marquis, Hammarlund, R.C.S. etc., 1¼" or 1½" diameter — 4, 5 or 6 pins, required to restore and rebuild old T.R.F. receivers. Good price paid — ZL2ANS, D. W. Martin, 111 Avenue Road, Greenmeadows, Napier.

WANTED: Antenna tuner, 80-10 metres for Yaesu, Musen FRG7. Details to — H. G. J. Waayer, 6 Delphic Street, Sawyers Bay, Otago. Phone Port Chalmers, 8446.

FOR SALE: Yaesu FT101B, 160-10, excellent condition, $600. Also matching FV101B remote VFO, as new, $150 — ZL1BVX, Phone 83-315 Rotorua, evenings.

WANTED: 1. Any National (USA) receiver with sliding coil tray for band changing. such as NC100/NC101 etc. 2. National Velvet Vernier dial as used on the National SW3 Receiver—this has a variable vernier action by the knob. 3. Any Atwater Kent knobs. Jock, ZL2GX.

FOR SALE: Yaesu FT200, 80-10m, with 230v power supply and speaker DC 12 Power Supply, $450. External VFO for FT200, $50. Apply — ZL1BBU or ZL1BJP, Callbook address, Phone Tauranga 63-256.

WANTED to buy: Any 300-500 pF variable capacitors (about 4). Any old power transformers (about 2), any voltage, 1 or 2 amp. — H. van der Knaap, P.O. Box 12, Karamea, via Westport.

WANTED: Hallicrafters S36. — ZL1BCF Phone Auckland 2782-427 or 73 Hillcrest Road, Papatoetoe, Auckland.

WANTED: Frequency counter. Range, make, price to — ZL1APJ, Callbook address, Phone Taupo 86-510.

FOR SALE: Good home required for Icom 701, as new condition, no modifications, with desk mic, $990. Also 15V, 25A fully regulated and protected Power Supply, with inbuilt digital clock, $195. Aerial Coupling Unit, home brew, to match IC 701, to any unbalanced load. RTTY equipment. Rare opportunity to buy American quality! HAL DS2000 KSR Keyboard. Baudot, ASCII and Morse. All popular speeds up to 175 wmp. Also Video Monitor (not a TV set conversion), and home brew AFSK modem, same as Hal ST5000. $1500 complete. Mobile HF Whip, Hustler, centre loaded, 80, 40, 20 and 15 metres, bumper mounted, $70. Oscilloscope, Telequipment D61, 10MHz, as new, with two 10:1 probes, $410. Beautiful Icom 211, with 80w linear mounted on removable aluminium frame (no unsightly holes). Slightly modified for MCW. The complete 2m home station or high power mobile, $750. — Stan Vause, ZL1AWV, Ph. Ak 2763-949 or C/o Consolidated Electronic Industries, Private Bag, Otahuhu.

FOR SALE: FT101 Transceiver with FV101 external VFO and matching speaker. Also SWR Bridge, desk and hand mikes and full set of finals, $600. — Phone 6838 Hawera, ZL2BLT, Callbook address.

FOR SALE: Airlane 2 metre rig, good working condition, but unmodified, $150 ono. — ZL1AMZ, Callbook address or phone 568-986 Auckland.

WANTED: Any National (USA) receiver with sliding coil tray for band changing — AND, any information on the receiver as detailed on page 40, Jan/Feb. "Break-in". — ZL2GX, 152 Lytton Road, Gisborne.

BUY: "Ionospheric Radio Propagation" by Kenneth Davies. ZL2ADX.

FOR SALE: IC22S, new band plan, $320. Guy Kendall, 57 Merivale Lane, Christchurch. Phone 554-616.

FOR SALE

24 Hour Clock Modules. Require power transformer and toggle switches to operate. Data sheet supplied.

Price $10 per 4 modules (includes Postage).

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ICOM VHF & UHF GEAR — See December "Break-in" for photos and details of the IC-290A 2 metre all mode mobile/home base rig with all the latest features and supplied complete with remote tuning/scanning mic. at **$698** complete. The IC-25A 2 metre 25 watt FM mighty midget shown full size, does it all and very popular at **$498** with remote tuning/scanning mic. Of course the IC-2A ever popular 2 metre hand held with its very extensive range of accessories remains the world's top selling unit of its type. Still **$349**, and its matching 432 unit, the IC-4A still **$359.**
See the Jan/Feb "Break-in" for details of the IC-560 6 metre all mode rig at **$698**, and the new IC-490 432 all mode mobile/home base rig with all the usual Icom features built in, at **$798.**

THE SCE-6/14G — 6 metre gutter grip antenna, slightly loaded ¼ wave whip, just a little longer than the 2 metre 5/8 whip, selling well at **$24.50.**

10.2GHz — The TR10GA complete with 10mW FM/CW Transceiver with built-in Gunplexer is now available to order at around **$899.**

MORSE KEYS — The High Mound HK-706 standard hand key in stock at **$39.**

ANTENNA ACCESSORIES — 139ft lengths of 7/.069 hard drawn copper antenna wire **$13.50**, imported egg insulators **99 cents**, 450 "open" wire ladder line, 2kW rating, **$34/100 feet**, RG8X foam coax **$1.40 metre**, heavy duty RG8U foam coax 2kW rating, **$2.80/metre**, 8 core rotator cable **75 cent a foot**, 1:1 & 1:4 Baluns **$43**, Diawa co-ax switches, 4 way and 2 way **$135 & $45**, Daiwa tuners — **still** some at pre-duty prices, CNW218, CNW418, **$224 & $275.**

TWO METRE GEAR

The IC-2A—Super compact 2 metre 800 channel synthesised hand held "that really is". 1½ watts or .2 watts out with supplied nicads and charger. Separate speaker/mic. available for mobile/home base use etc. **$349**

IC-2A ACCESSORIES—The IC-HM9 speaker/mic., **$29.50**; the IC-BC30 desk charger, **$89.90**; the IC-BP3 standard nicad battery pack, **$36**; the IC-BP5 higher power fast charge nicad pack, **$69** (needs the BC-30 to charge); the IC-BP4 battery shell (uses pen cells), **$19.50**; the IC-DC1 regulator, same size as the BP3 but allows direct operation from 11-15 volts DC home base or mobile, up to 4 watts out; the IC-CP1 car cig lighter charging unit, **$10.90**; the IC-LC3 leatherette case, **$9.90**; the ¼ wave telescopic whip, **$14.50**; the IC-ML1 10-14 watt amplifier, **$149.**

The IC-25A—Ultra compact 2 metre FM mobile, 2" x 5½" x 7" deep, 25 watts output. Digital readout, 5 memories, scanning, full Simplex or repeater operation on memories, repeater reverse, 1 watt low power position, and of course supplied with the IC-HM10 remote tuning/scanning microphone for mobile convenience. Twin VFOs of course. 5 kHz and 25 kHz stepping for easy channel change. **$498**

The IC-290A—Development of the popular IC-260A. 2 metre all mode mobile rig, 5 memories with full duplex and simplex capability, scanning, repeater reverse, twin VFOs and many other features. The IC-290A is supplied with the IC-HM10 remote tuning/scanning microphone and of course this makes mobile SSB operation a breeze. Great value at **$698**

The IC-251A—All mode home base 2 metre rig, 240 volt AC light weight Chopper design supply built in (as well as 12 volt DC for mobile), 3 memory channels with scanning, VOX, R.I.T., noise blanker, and of course twin DPL VFOs again give any frequency and any repeater split. Upper and lower SSB, CW and FM. **$949**

The Mirage B-108—2 metre all mode linear, 80-100 watts out with 10 in, but operates well with 1 watt in for use with hand-helds. Built-in receive pre-amp. **$355**

Lunar Receiving Preamps—Excellent units available for 28MHz, 50MHz, 144MHz and 432MHz.

SIX METRE GEAR

The IC-560—6 metre all mode rig with the usual ICOM twin VFOs, 3 memories, scanning, upper & lower SSB, FM, and CW all standard. 50-54 MHz, 10-14 watts out with 12-14 volts DC in. Good value at **$698**

The IC-551—10 watt all mode 6 metre rig, as per the IC-211, dual DPL VFO's, SSB, CW, AM (and optional FM) 50-54 MHz, pass band tuning vox and many other features. 240 volts or 12 volts. **$898**

THE IC-551D—100 watt all mode rig as per the IC-551 above, except 12 volt DC, with vox and P.B.T. **$998**
FM unit for the 551 and 551D. Supplied with set. **$141**
240 volt power supply if required **$298**

432 GEAR

The IC-451—All mode 432MHz rigs as per the IC-251. FM, SSB and CW. 10 watts out. 420 to 439.99 MHz, twin VFO, any split — **$1150.** The IC-AGI mast-head pre-amp. **$149.**

The IC-490A—All mode 432 rig exactly as per the IC-290A except covers 430-440MHz. Mobile or Home base. **$798**

The IC-4A—430-440MHz FM hand held as per the IC-2A. **$359**

SOUTHERN CROSS ELECTRONICS S.C.E.—AMATEUR RADIO SUPPLIES

HF GEAR

The IC-720A—Now compatible with PS-20 lightweight chopper power supply/speaker unit, transmits SSB, CW, AM and RTTY on all 9 HF bands 160 through 10 metres, and receives the same modes on the built-in General Coverage Receiver 100 kHz-30 MHz. Many built-in features include twin VFO's, pass band tuning, and 3 speed frequency tuning down to 10 cps stepping giving 360 degrees of tuning knob rotation for 1 kHz! That's real band spread. 12-14 volts DC in, 100 watts out. With IC-SM5 Desk Mic. $1698

If required the IC-PS20 AC power supply/speaker unit. $298

AM and CW filters ordered with the 720A and installed by us, **$115** the pair.

The IC-730—The very best HF mobile or home base all solid state transceiver. This very compact rig comes complete with all the ICOM "built-ins" such as twin VFOs, memory channel, speech processor, band pass tuning, a very hot and advanced receiver featuring a built-in switchable pre-amp for those weak DX stations, 3 speed tuning down to a band spread of 1 kHz per 360 degrees of the tuning knob. See inside back cover 1980 "Call Book". Supplied complete with the IC-HM10 remote tuning/scanning microphone for fantastic mobile convenience. All HF bands, 80 through 10 metres. 100 watts out on SSB and CW, but also has AM for those who require it. $1149

The CUBIC (SWAN) Astro-150/151, & Astro-103 — Advanced solid state HF rigs as advertised available at **$1498** and **$2198** respectively.

Yaesu—The FT-707, FT-107M, FT-101ZD and the FT-902DM all in stock at **$1259, $1828, $1794 and $2355** respectively. All Yaesu equip. available.

COMMUNICATION RECEIVERS

The YAESU FRG7 and FRG7700 $599 and **$1045** with memories (**$835** without). Other makes on request. Don't forget the new IC-720A includes a full general coverage receiver at no extra cost!

ANTENNAS

2 Metre Beams — Crossed yagis, collinears, 5/8 whips, 432 beams, 6 Metre beams, and most antenna accessories in stock.

The SCE2/58G — 2 Metre gutter grip mobile whip and the **SCE6/14G** 6 metre whip $24.50

Hygain — TH3JNR, TH3MK3 and TH5DX **HF triband beams** at **$365, $465, $585.**

TET HF BEAMS — Feature **flat response over the whole band,** exceptional gain, and light weight. 6061 aluminium alloy construction with stainless fittings. 2 kW rating. **IDEAL FOR SOLID STATE RIGS.**

The TET HB-33SP — 3 elements, 8.5 dB on 14 and 21MHz, 10 dB on 28MHz. 29.8 lbs. $498

The TET HB-43SP — 4 elements, 10 dB on 14 and 21 MHz, 11 dB on 28 MHz, 38.7lbs. $598

Trapped Verticals — The Hygain 18AVQ, 80-10 Metres, and 40-10 Metres. $275 and $210

The IC-AH1 — Automatic Band-switching Mobile HF whip for use with IC-730 and 720A. 80, 40, 20, 15, and 10 Metres. NOW ONLY $498

ROTATORS

The Alliance U-200 for VHF/UHF beams. A very popular model. $139

The Alliance HD-73 for HF beams up to 10.7 sq. ft. wind load. $344

The CDE Ham 4 — For heavy HF beams — less mast mount **$489.** With mount $535

LINEAR AMPLIFIERS

The ICOM IC-2KL—All solid state linear 160-10 metres including the new bands, auto band switching with new IC-720A, or with the IC-720 when fitted with an LDA unit. Runs 1 KW input on SSB and CW. No tune-up! Expensive but how convenient. Complete with AC power supply. $2749

The Dentron Clipperton L—160-10 metres, uses four 572B tubes. 2kW PEP. $1680

The Dentron GLA-1000B—Latest model with many improvements including input tuning for SWR sensitive Solid State Rigs. Four D-50 tubes—1200 Watts PEP $898

POWER SUPPLIES

Power Supplies — SCE power supplies for solid state rigs. $239

The SCE-DC30KII—Heavy duty 13.8v 30A max. regulated supply, with twin output terminals.

SCS-DC8—New, suitable for the new breed of 25 Watt 2 Metre FM sets, and will supply up to around 7.5 amps maximum with 5-6 continuous. An attractive unit finished the usual SCE black and silver. $98

ELECTRONIC KEYERS

The MFJ 422 — Electronic keyer complete with the excellent Bencher paddle, built in side tone, auto, semi-auto, tone, speed, and volume controls. $239

ANTENNA TUNERS

THE MFJ-941B — 160-10 metres, up to 300 watts, tunes co-ax, random wires, and balanced feeders. SWR/Power meter and has rear mounted 4 position, antenna switch. $249

THE MFJ-949B — A more swept up version of the 941 with front mounted antenna switch, built in dummy load, improved SWR/Power metering. Nice Unit. $359

The IC-AT100—Fully automatic tuner, auto-bandswitching with the IC-720A & IC-730. $668

The IC-AT500—As per the AT100 but handles up to 1kW for use with the IC-2K1. $889

SWR Meters — The Swan SWR Meter, twin meters and and operates 160-2 Metres. $53.50

The Palomar Engineers R-X Noise Bridge — How did we ever get on without them! $98

FREQUENCY COUNTERS

Digimax D500—500MHz, 8 digits, 1ppm 17-39 degrees C, 12 volts DC. A compact little counter, supplied complete with antenna. $227

Digimax D612—1.2GHz, 9 digits, 2ppm 10-40 degrees with the built-in oven. 12 volts DC operation and has a built-in battery holder for portable use. Complete with antenna. $379

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ICOM
HF ALL BAND SSB CW AM TRANSCEIVER
IC-730
ICOM's go-anywhere HF rig for everyone's pocketbook

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The new very compact IC-730 (9½ x 3½ x 12 inches) HF Transceiver covers 80-10 metres, 100 watts out, SSB, CW, & AM, with twin VFO's, IF shift tuning, speech processor, memory switchable receive pre-amp, supplied standard in NZ with the IC-HM10 remote tuning microphone, making it the cheapest, **most versatile hot little full featured rig around** and unmatched at **$1149** complete.

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THE ICOM HF SYSTEM
NO TUNING/AUTO BANDSWITCHING
Well Proven–Unmatched–and Very Modern

The Fabulous IC-720A

HAM RADIO STATION

This well proven Transceiver covers all HF Ham Bands 160-10 Metres, 100 Watts out, with all the usual Icom built in extras such as twin VFOs, speech processor, pass band tuning, 3 speed selectable band spread down to 360 degrees rotation of the tuning knob for 1kHz!, plus a Full General Coverage Receiver 100kHz-30MHz. All solid state compact (9½ x 4½ x 12 inches) for light weight portable operation, 12-14 volts DC. (IC-PS20 light weight chopper design power supply/speaker for 240 AC operation). You get the IC-720A complete with IC-SM5 desk mic for **$1698.**

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Fully automatic / auto band switching antenna tuner. $648

3 second max tune up time (merely talk or start keying, no carrier insert required) and automatic selection of up to 5 different antennas if required as it auto band switches with the IC-720A/IC-730. Operates on 12-14 DC or 240 volts AC.

A really remarkable unit and another Icom first, unmatched by any other. **$648.**

Note the IC-AT500 1kW auto tuner for use with the IC-2KL kilowatt solid state matching linear. **$889**

PACKAGE DEAL — Buy the IC-720A complete with any one of IC-PS20, IC-AT100/500, IC-AH1 and get **$50 discount.**

NOTE — See Inside Back Cover Jan/Feb "Break-in" for SCE/ICOM Agents.

Gemini Electronics 1977 Ltd.

81 View Road, Mt Eden, Auckland, NEW ZEALAND
Phone 606-059 P.O. Box 14-574, Auckland Telex NZ 2767

PRICE LIST

MARCH, 1982

All prices are subject to change without notice.

KENWOOD

TR2500 144-148 2.5w FM Handheld, c/w Nicads and charger	$405.00
ST2 Base Stand — TR2500	$95.00
MS1 Mobile Stand — TR2500	$53.00
SC4 Soft Case — TR2500	$23.00
SMC25 Speaker Microphone — TR2500	$30.00
TR7730 2M FM Mobile. 25w 800 ch Digital. 5 memories	$479.00
TR7800 2M FM Mobile. 25w 800 ch Digital. 15 memories	$573.00
TR7850 2M FM Mobile 50w 800 ch Digital. 15 memories	$615.00
TR9130 2M All Mode Mob & Home Station Digital 25w	$695.00
TR8400 70cm FM Mob 10w 800 ch Digital 5 memories	$571.00
TR9500 70cm All Mode Mobile and Home Station Digital 430-440MHz	$842.00
TR9300 6M All Mode Mobile and Home Station. 50-54MHz	$695.00
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S130SE SSB All Band Transceiver with PLL Digital 100w	$925.00
FA4 Fan Assembly for T130SE	
MB100 Mobile Bracket — TS120, TS130, TS660	$38.00
DFC230 Digital Freq Controller — TS120, TS130, TS530, TS830	$328.00
TS660 All Mode Quadbander 15m-6m Digital VFO. 5 memories	$899.00
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BS8 Pan Adaptor Kit — SM220	$77.00
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VB2530 25w Amplifier for TR2500	$175.00

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Kenwood

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VFO230 Remote VFO with memories for TS530S, TS830S	$405.00
VFO240 Remote VFO. No memories for TS530S, TS830S	$306.00

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Kenwood

SP100 Deluxe Spkr for R600, R1000	$82.00
SP120 Remote Spkr for TS120, TS130, TS660	$72.00
SP230 Remote Spkr for TS530S, TS830S	$99.00
SP40 Mobile Spkr	$39.00

POWER SUPPLIES

Kenwood

PS20 230v-12v P.S. TS120V, TS130V	$154.00
PS30 230v-12v P.S. TS120S, TS130S, TS180S	$269.00
ACE25 230v-12v 25 amp	$189.00
TE6BE 230v-12v 8 amp	$98.00

ANTENNA TUNERS

Kenwood

AT130 Antenna Tuner TS130	$210.00
AT230 Antenna Tuner TS530, TS830	$325.00

ACCESSORIES

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MA5 Mob Ant 80-10. Bumper Mount	$219.00
HC10 Digital World Clock	$145.00
LF30A Low Pass Filter	$48.00
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MC60-S6 Deluxe Desk Mic with scan prov.	$81.00
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MC35S Hand Mic. Noise cancel. 50K ohm	$36.00
HS4 Communications Headphones	$33.00
HS6 Communications Headphones	$43.00
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PB25 Nicad pack — TR2500	$42.00
PB24 Nicad pack — TR2400	$37.00
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GE58 2m 5/8 whip with lock gutter mount	$28.00
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GE35 SWR & Power Meter, Twin Meter	$35.00
GE50 SWR & Power Meter, Twin Meter	$39.00
ST1 Base Stand — TR2400	$90.00
SC3 Soft Case — TR2400	$22.00
BC5 DC Quick Charger, Mob Use — TR2400	$39.00
SMC24 Speaker Mic. — TR2400	$30.00
S2001A Final Tubes — TS520, TS820 Per Pair	$73.00
6146B Final Tubes — TS530, TS830 Per Pair	$73.00
12BY7A Driver Tube	$7.00

RE QSL CALLBOOK Page 79/80

DX 170

Alan